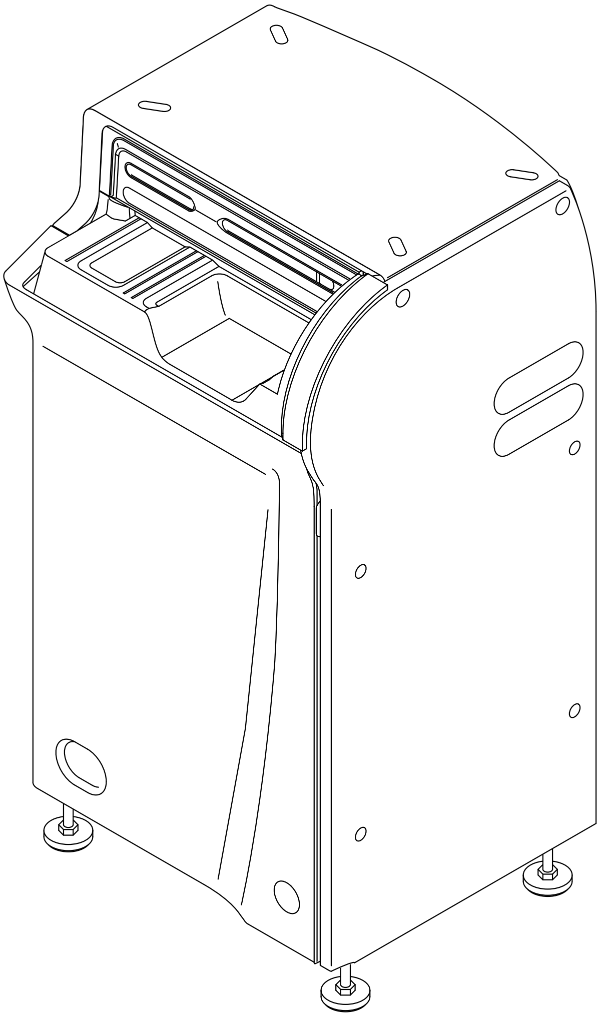
FUJIFILM

FUJI COMPUTED RADIOGRAPHY

# FCR XG-1

## CR-IR346RU

Service Manual



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Fuji Photo Film Co., Ltd.

Printed in Japan

The relationship between mR (milliroentgen), which is the unit of radiation, and µC/kg (micro-coulomb/kilogram), which is the SI derived unit of radiation, is as follows.

1 mR = 0.258 µC/kg

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# 1. Getting Started

## ■ Scope

This Service Manual is applicable to Fuji Computed Radiography CR-IR346RU. The machine is categorized as Class 1 according to IEC classification.

## ■ Notation of Unit Symbols

For notation of unit symbols, metric units set forth in the International Systems of Units (SI) are used, as a rule. However, metric units that are allowed in the Measurement Law, not in the SI, are used in some cases.

## ■ Notation of Warnings, Cautions, etc.

⚠ ***WARNING***

*Used when death or serious injury may occur if the instruction is not observed.*

⚠ ***CAUTION***

*Used when minor or medium levels of physical injury may be incurred if the instruction is not observed.*
*Also used when the machine may suffer serious trouble (such as unrecoverable or difficult-to-recover trouble).*

***◆ INSTRUCTION ◆***

*Used when the machine may suffer damage, or any failure or malfunction may occur, if the instruction is not observed.*

***◆ NOTE ◆***

*Used to indicate the matters that need attention during steps of the procedure.*

***◇ REFERENCE ◇***

*Used to indicate terminology or supplemental explanations.*

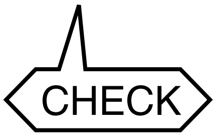
☞ Used to indicate the chapter or section you should refer to.

## ■ Notation in the Manual

In this Service Manual, the CR-IR346RU and CR-IR346CL are denoted by RU and CL, respectively.

## ■ Notation of Symbols

- Check/Adjustment indicator:

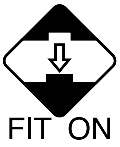


Indicates that it is necessary to check or adjust the installation location when the part or component removed is to be reinstalled.

This indicator is placed in the illustration that depicts the procedures for removing the parts and components.

When you see this indicator, refer to its relevant "■ Check/ Adjustment Procedures."

- Half-punch indicator:



Indicates that it is necessary to align the half-punches when installing the parts or components.

However, it is not indicated for the half-punches for improving ease of assembly or preventing erroneous assembly procedures.

## ■ Servicing Instruments and Tools That Require Inspection/Calibration

The machine should be installed and serviced by use of servicing instruments and tools that have been inspected and calibrated as appropriate.

If the machine were serviced using servicing instruments and tools that have not been inspected and calibrated, proper performance of the machine could not be guaranteed.

Servicing instruments and tools that require inspection/calibration are as listed below.

Inspection/calibration procedures should be performed in accordance with the inspection/ calibration manuals described in the ECN Information.

### ● Instruments and tools that require inspection/calibration

| Name | Inspection | Calibration | Inspection/calibration manual No. |
|---|---|---|---|
| Dosimeter | – | ○ | ECO NO. FCR-A014 |
| Steel rule (150mm) | ○ | – | |
| Steel rule (300mm) | ○ | – | |
| Digital tester | ○ | ○ | |
| Calipers | ○(✻) | – | |

✻ : A block gauge for use in inspection requires calibration.

TR2H0001.EPS

# 2. Safety Precautions

Warnings and cautions regarding the procedures should be observed to avoid possible physical hazards and serious accidents that may occur during installation and servicing.

Labels that describe relevant precautions are attached on the machine.

The instructions on such labels should also be observed during procedures.

## 2.1 Working Precautions

### ■ Power Supply

- Unless otherwise instructed in the Service Manual, be sure to turn OFF the power of the machine and unplug the power plug before servicing. With the power plug still plugged, you may experience electric shock, burn, or secondary damage due to short circuit even when the machine is powered OFF. It should be noted, however, that some servicing procedures, such as voltage measurement, cannot be performed under power-OFF condition. In such cases, use due care to avoid electric shock, burn, or secondary damage due to short circuit, as instructed in this manual.
- To restart or reboot the machine, power it OFF and wait more than five seconds before powering it ON again. If the machine is powered ON within five seconds, it may automatically shut down for protection against overcurrent and overvoltage.

### ■ Drive Mechanism

Be sure to turn OFF the power before servicing the gears, cams, belts, and other drive mechanism parts. Otherwise, your body or clothing may be entangled.

However, there may be cases where the procedures cannot be performed under power-OFF condition. In such cases, use due care to avoid entanglement of your hand, foot, hairs, and clothing with any rotating mechanism, as instructed in this manual.

### ■ Heavy Objects

Exercise due care regarding your working posture to avoid back pain during removal and installation of heavy objects.

### ■ Safety Devices

Safety devices (such as fuses, circuit breakers, interlock switches, panels, and covers) should always be enabled. Never attempt to make any alteration or modification that may impair their safety features.

## ■ Optical Parts

Observe the following rules when servicing the optical parts. Otherwise, the image quality may be degraded.

- Before removing the protective housings, be sure to turn OFF the high-voltage switch (HV switch). If the machine is powered ON with any of the protective housings removed, the photomultiplier will be damaged.
- Never remove the scanning optics unit covers. If the covers are removed, the image quality may degrade.
- For dust removal procedures, observe the instructions described in the manual.
- Some high-voltage parts, such as the photomultiplier, may not be sufficiently discharged even after power is turned OFF. When servicing such parts, exercise due care to avoid electric shock hazards (not to touch the connector and terminal carelessly).

## ■ Other Working Precautions

- Do not remove or install any part or component while the machine is powered, because of possible electric shock hazards.
- When performing checks or adjustments under the powered condition, exercise due care against electric shock or other hazards.
- Do not touch the parts (such as erasure lamps) that remain at high temperature because you may suffer burns.
- When servicing the scanning optics unit and printed circuit boards, be sure to wear an antistatic wristband to remove static electricity built on the human body. Static electricity may cause damage to the printed circuit boards.
- Never remove the rubber belt of the subscanning unit, except for its replacement.
- Secure the machine onto the floor in place by use of its adjustable feet or retainers.
- Keep clean the product labels, safety standards labels, product serial number indications, and so forth attached on the machine, and do not peel them or put another label over them.
- Before powering ON the machine after completion of the servicing procedures, make sure that all the parts, screws, connectors, and so forth that were removed have been reinstalled as appropriate, and that no tool is left in the machine.

## 2.2 Precautions Against Laser Radiation

As indicated by the Certification and Indication Label attached on the rear cover of the machine for overseas use, the machine complies with the U.S. Federal Regulations concerning laser safety. The image reader incorporates a laser with a maximum output of 50 mW (Class 3B, semiconductor laser wavelength of 660 nm, red visible light), but you will not be exposed to any hazard if you perform tasks as instructed in this manual.

### ■ Precautions Against Laser Exposure

Observe the following precautions to avoid laser exposure.

● Procedures that require precautions against laser exposure

When performing the following procedures, observe the instructions exactly as described in this manual to avoid laser exposure. After the procedures are completed, put the removed protective housings and screws back exactly in their original position to prevent leakage of a laser beam out of the machine.

- Removal and reinstallation of the scanning optics unit.
- Replacement and cleaning of subscanning unit parts.

● Preventive maintenance for keeping the machine in compliance

In order to keep the machine in compliance, perform preventive maintenance programs described in “Preventive Maintenance Volume” at intervals specified.

● Things that should not be done to avoid laser exposure

Observe the following precautions to avoid laser exposure.

- Never attempt to perform procedures other than instructed in this manual because you may be exposed to laser beam radiation.
- Do not reflect a laser beam by placing a mirror or the like in the laser beam path.
- Do not alter the light path of a laser beam.
- Do not replace optical parts while the laser is energized.
- Do not attempt to make optical axis adjustment in the field. Although the semiconductor laser beam is red visible light, field adjustment of the optical axis cannot be done.

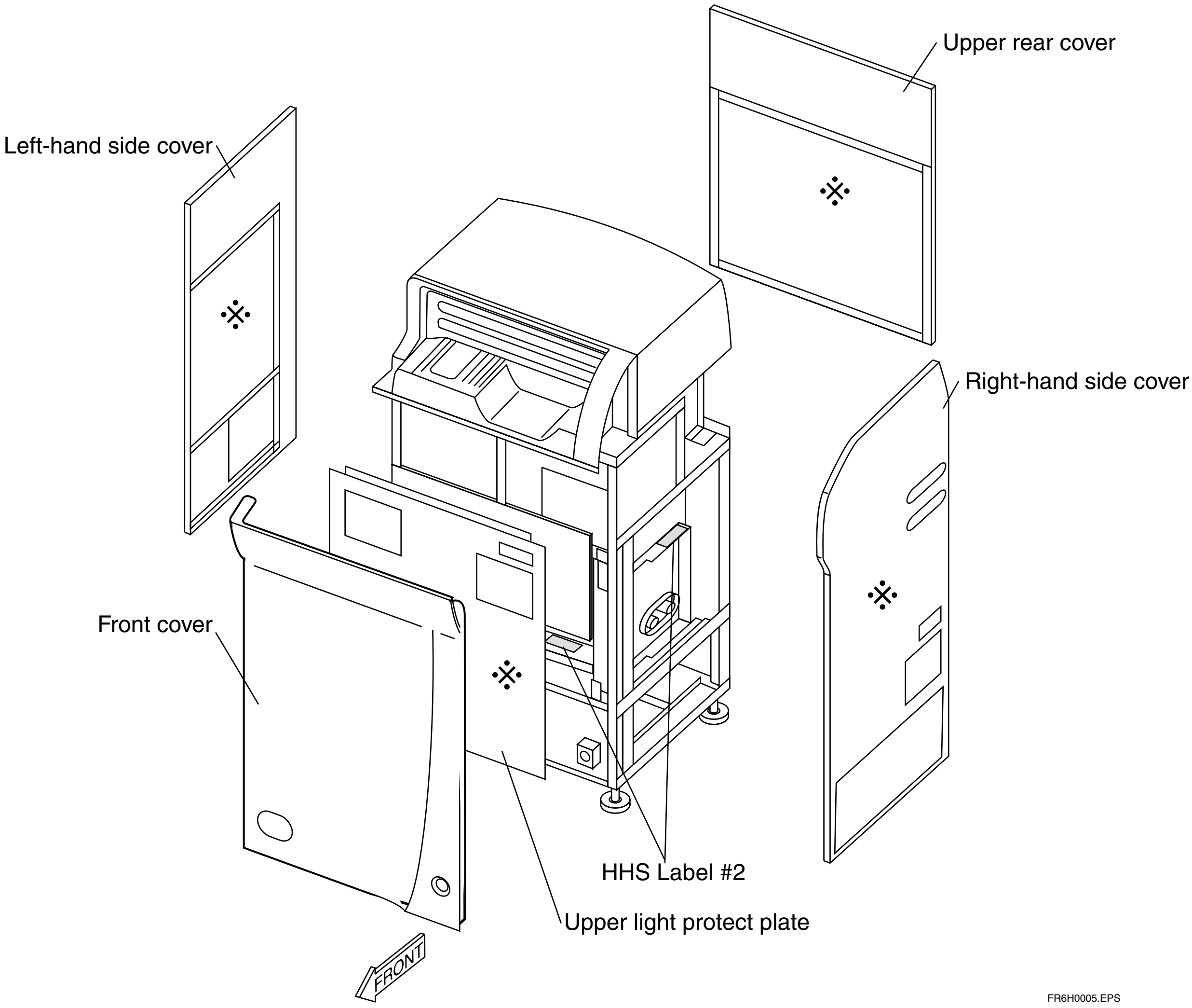
## ■ Protective Housings Against Laser Exposure

Even when the protective housings are removed for servicing, laser beams will never leak out from the machine unless the optical path is intentionally changed. However, if the optical path is changed inadvertently during optics-related procedures, the service engineer or other people around the machine may be possibly exposed to laser radiation.

During optics-related procedures, carefully perform the procedures while checking the instructions described in this manual, and after the procedures are completed, restore the protective housings removed back exactly where they were.

● Protective Housing of the Machine

The removable protective housings of the machine are illustrated below. The four covers marked by ※ in the illustration below are protective housings against laser exposure.


Upper rear cover
Left-hand side cover
※
※
Right-hand side cover
※
Front cover
※
HHS Label #2
Upper light protect plate
FRONT
FR6H0005.EPS

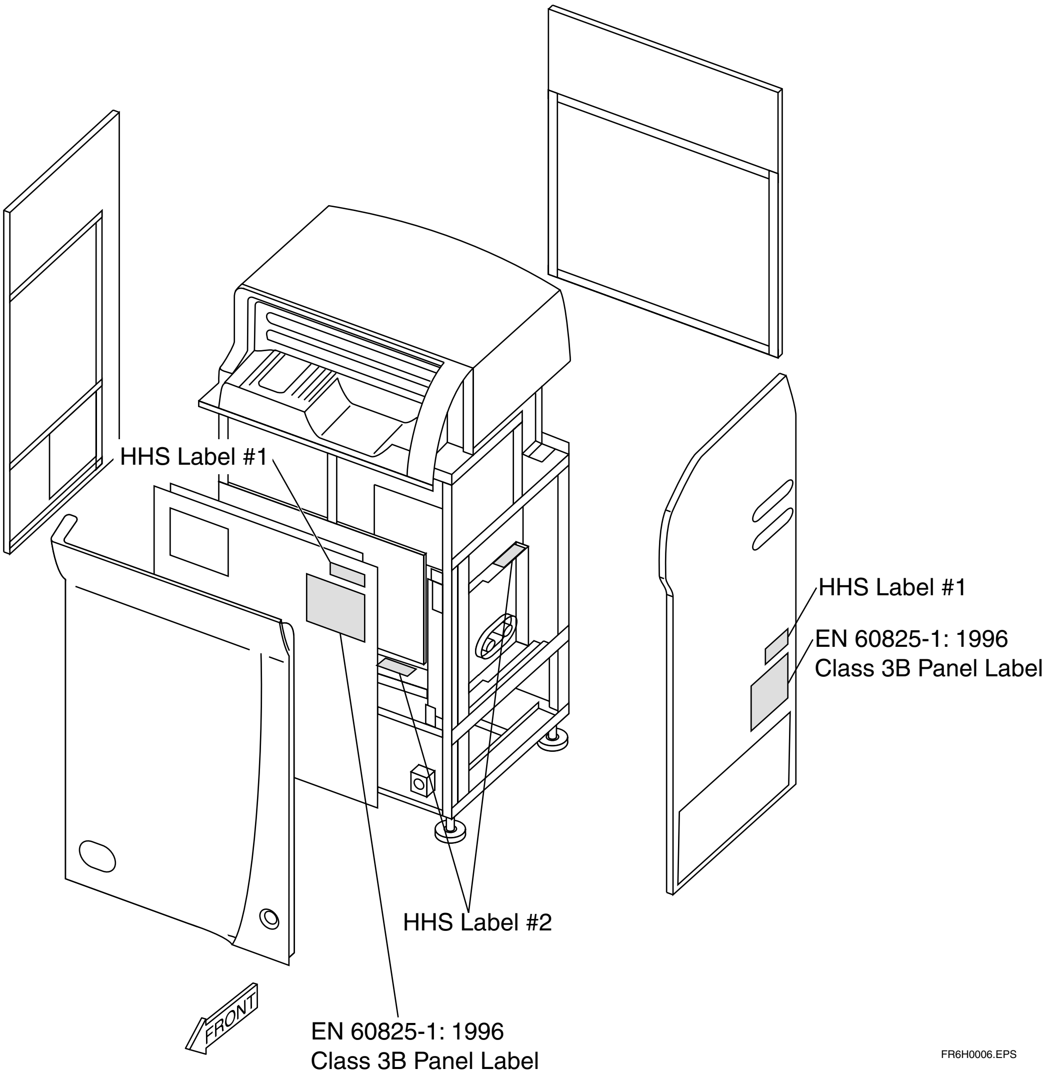
# 2.3 Safety Labels and Other Labels

## 2.3.1 Laser Precaution Labels

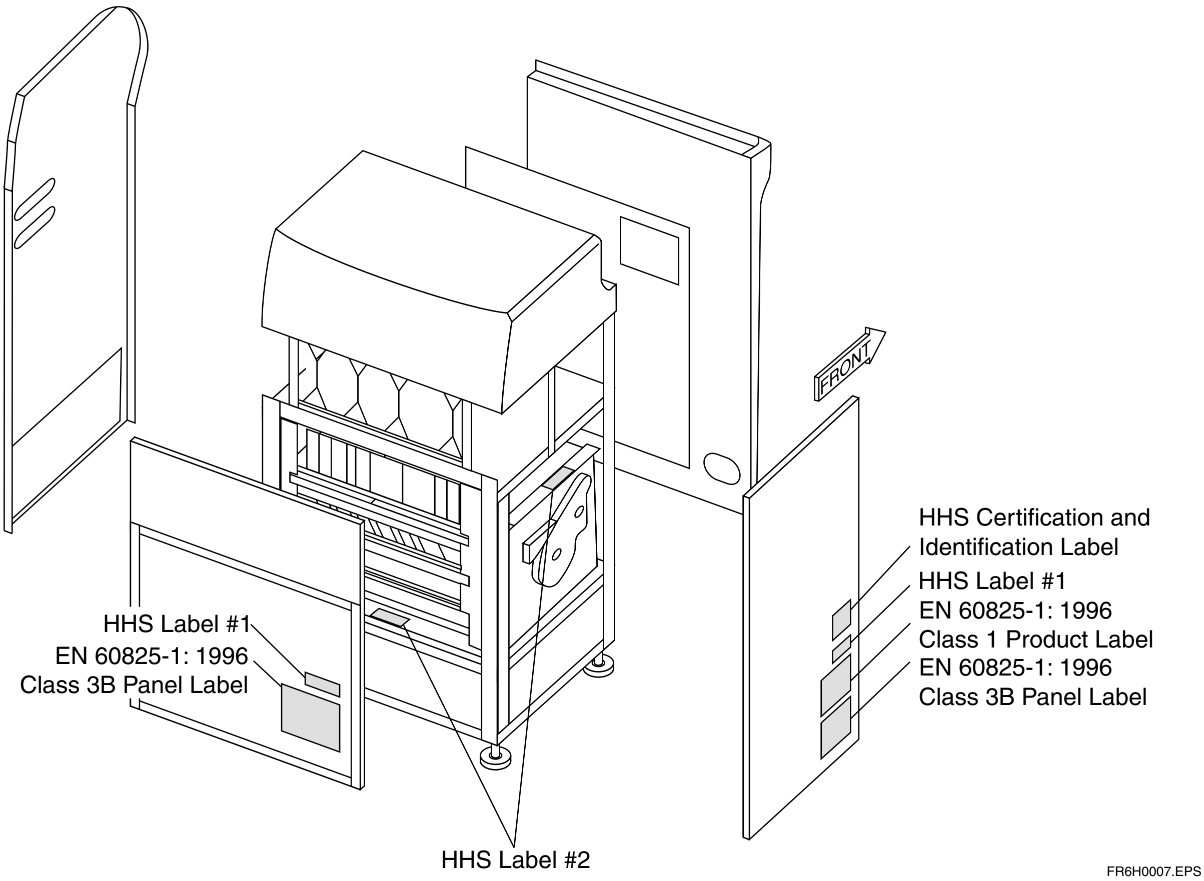
### ■ Precaution Label Attachment Locations

Below are illustrated the protective housings and attachment locations of laser precaution labels, as specified in Part 1-J, Federal Regulations Code “Title 21” issued by the FDA of the U.S.

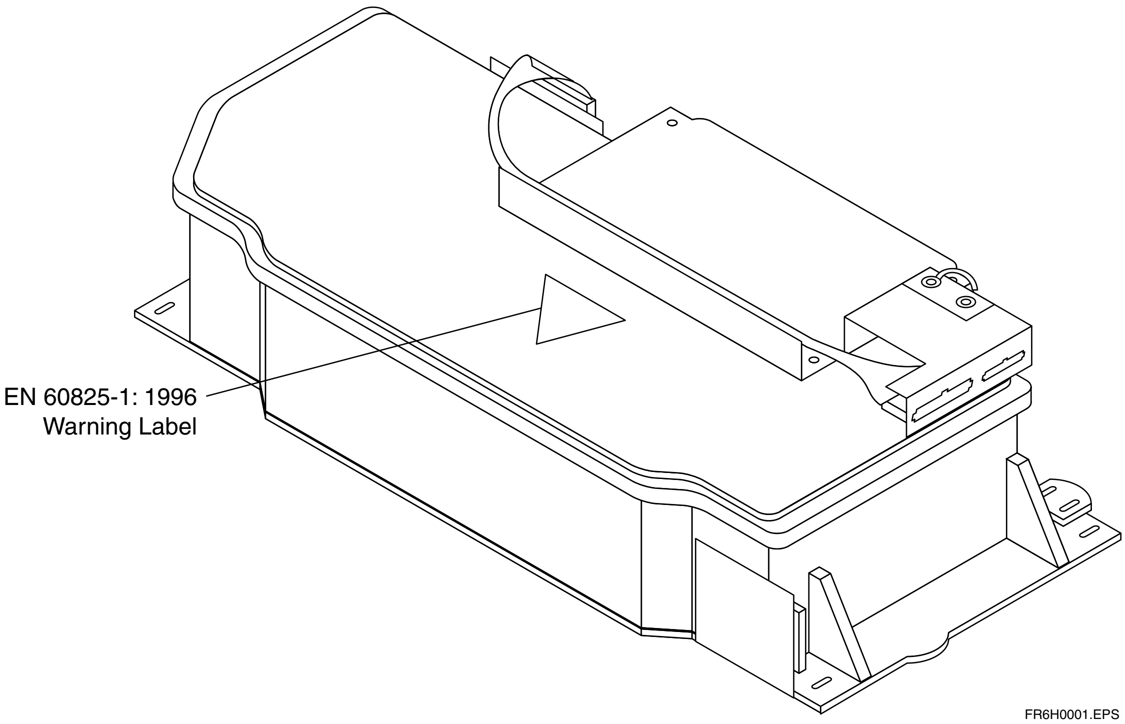
**● Machine**


HHS Label #1
HHS Label #1
EN 60825-1: 1996
Class 3B Panel Label
HHS Label #2
FRONT
EN 60825-1: 1996
Class 3B Panel Label

FR6H0006.EPS

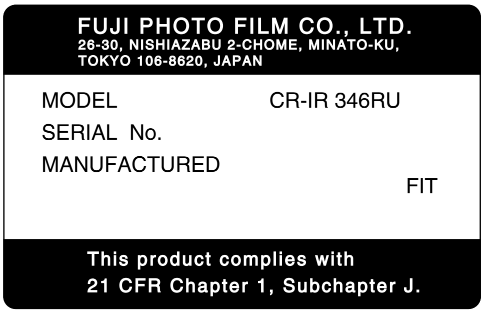

FRONT
HHS Certification and Identification Label
HHS Label #1
EN 60825-1: 1996 Class 1 Product Label
EN 60825-1: 1996 Class 3B Panel Label
HHS Label #1
EN 60825-1: 1996 Class 3B Panel Label
HHS Label #2
FR6H0007.EPS

## ● Scanning Optics Unit


EN 60825-1: 1996 Warning Label
FR6H0001.EPS

## List of Precaution Labels

### HHS Certification and Identification Label



**FUJI PHOTO FILM CO., LTD.**
**26-30, NISHIAZABU 2-CHOME, MINATO-KU,**
**TOKYO 106-8620, JAPAN**

MODEL CR-IR 346RU
SERIAL No.
MANUFACTURED
FIT

**This product complies with**
**21 CFR Chapter 1, Subchapter J.**

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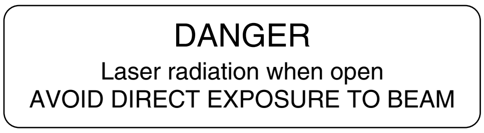
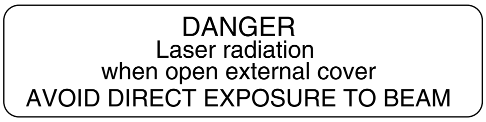
### HHS Label #1



DANGER
Laser radiation when open
AVOID DIRECT EXPOSURE TO BEAM

FR6H0008.EPS

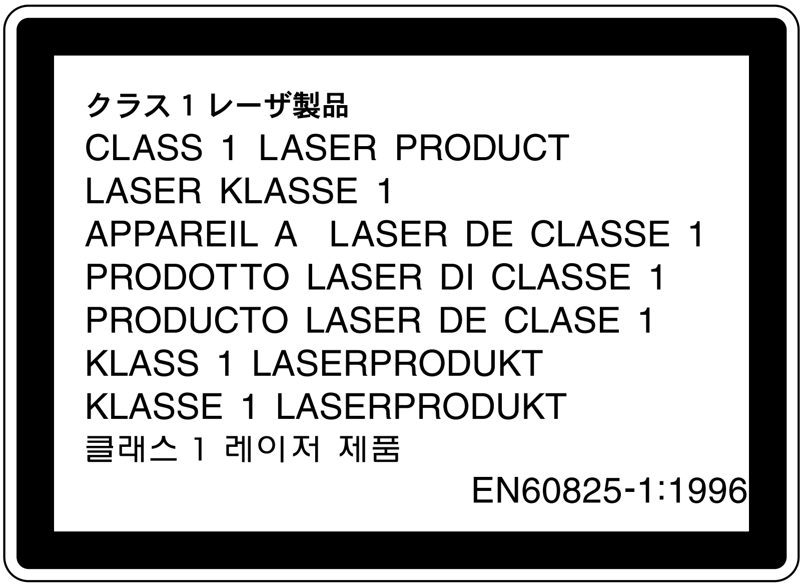
### HHS Label #2



DANGER
Laser radiation
when open external cover
AVOID DIRECT EXPOSURE TO BEAM

FR6H0009.EPS

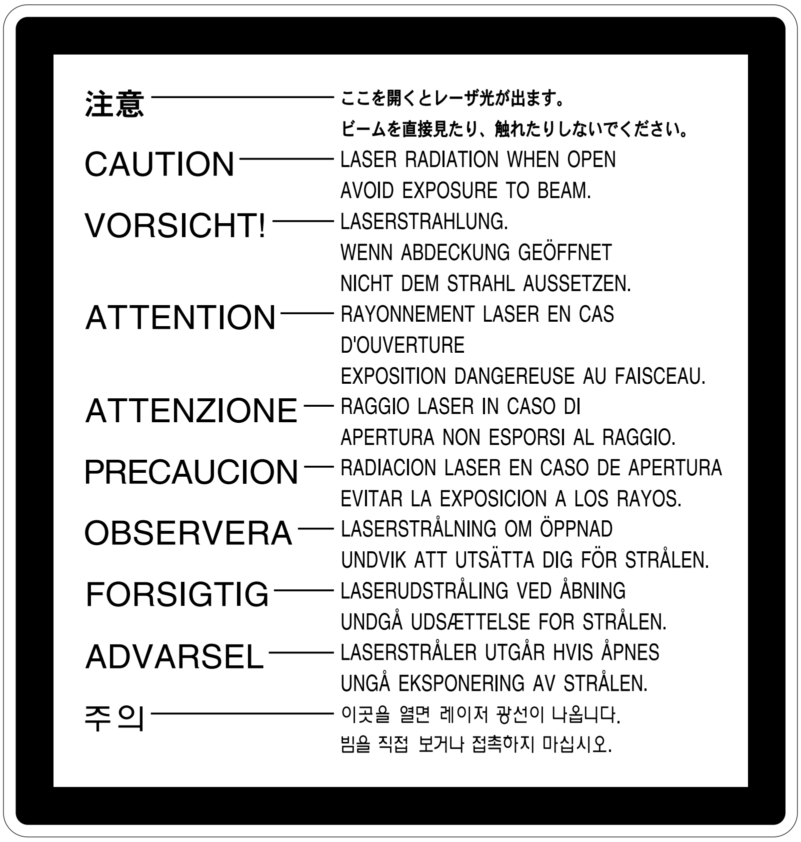
### EN 60825-1: 1996 Class 1 Product Label



クラス 1 レーザ製品
CLASS 1 LASER PRODUCT
LASER KLASSE 1
APPAREIL A LASER DE CLASSE 1
PRODOTTO LASER DI CLASSE 1
PRODUCTO LASER DE CLASE 1
KLASS 1 LASERPRODUKT
KLASSE 1 LASERPRODUKT
클래스 1 레이저 제품
EN60825-1:1996

FR6H0014.EPS

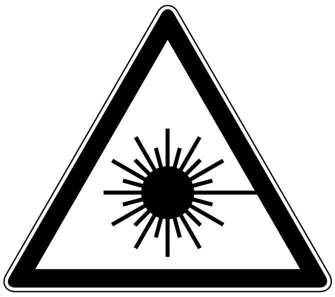
## ● EN 60825-1: 1996 Class 3B Panel Label



| | |
|---|---|
| 注意 | ここを開くとレーザ光が出ます。<br>ビームを直接見たり、触れたりしないでください。 |
| CAUTION | LASER RADIATION WHEN OPEN<br>AVOID EXPOSURE TO BEAM. |
| VORSICHT! | LASERSTRAHLUNG.<br>WENN ABDECKUNG GEÖFFNET<br>NICHT DEM STRAHL AUSSETZEN. |
| ATTENTION | RAYONNEMENT LASER EN CAS<br>D'OUVERTURE<br>EXPOSITION DANGEREUSE AU FAISCEAU. |
| ATTENZIONE | RAGGIO LASER IN CASO DI<br>APERTURA NON ESPORSI AL RAGGIO. |
| PRECAUCION | RADIACION LASER EN CASO DE APERTURA<br>EVITAR LA EXPOSICION A LOS RAYOS. |
| OBSERVERA | LASERSTRÅLNING OM ÖPPNAD<br>UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN. |
| FORSIGTIG | LASERUDSTRÅLING VED ÅBNING<br>UNDGÅ UDSÆTTELSE FOR STRÅLEN. |
| ADVARSEL | LASERSTRÅLER UTGÅR HVIS ÅPNES<br>UNGÅ EKSPONERING AV STRÅLEN. |
| 주의 | 이곳을 열면 레이저 광선이 나옵니다.<br>빔을 직접 보거나 접촉하지 마십시오. |

FR6H0015.EPS

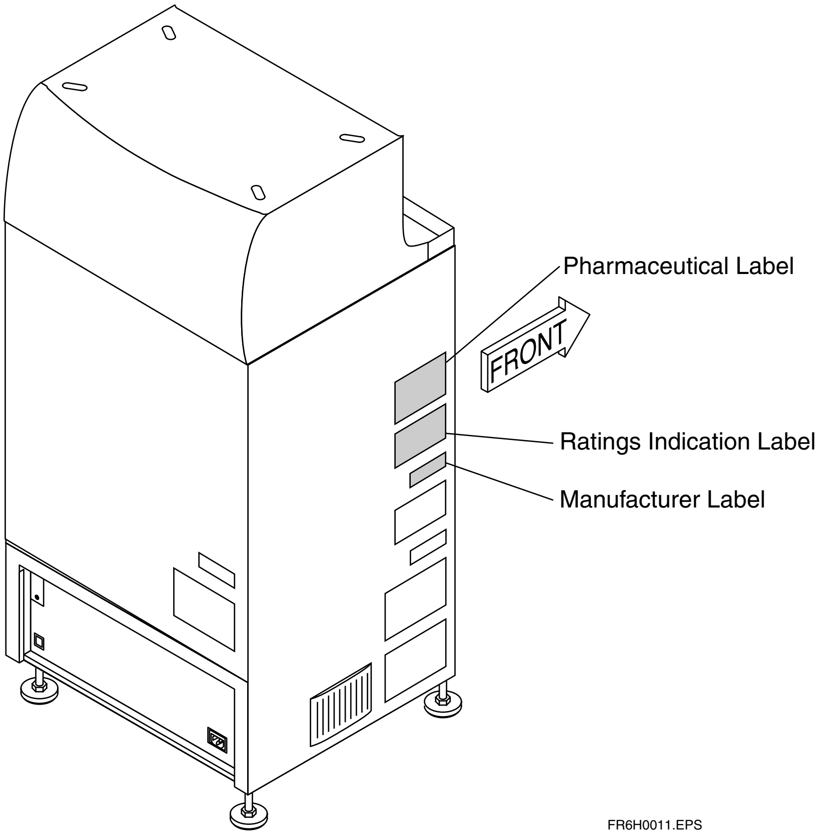
## ● EN 60825-1: 1996 Warning Label



FR6H0010.EPS

## 2.3.2 Other Labels

### ■ Label Attachment Locations

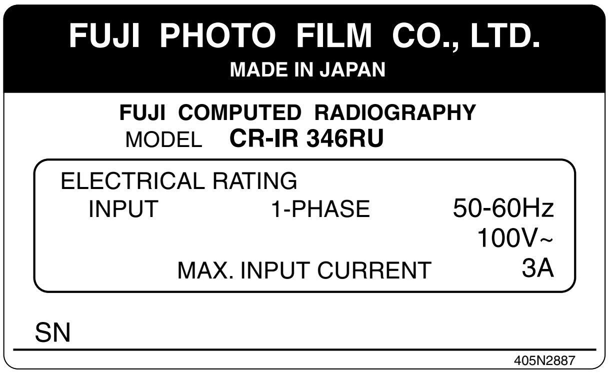

Pharmaceutical Label
FRONT
Ratings Indication Label
Manufacturer Label

FR6H0011.EPS

## ■ List of Other Labels

### ● Ratings Indication Label

- For use in Japan



**FUJI PHOTO FILM CO., LTD.**
**MADE IN JAPAN**

**FUJI COMPUTED RADIOGRAPHY**
MODEL **CR-IR 346RU**

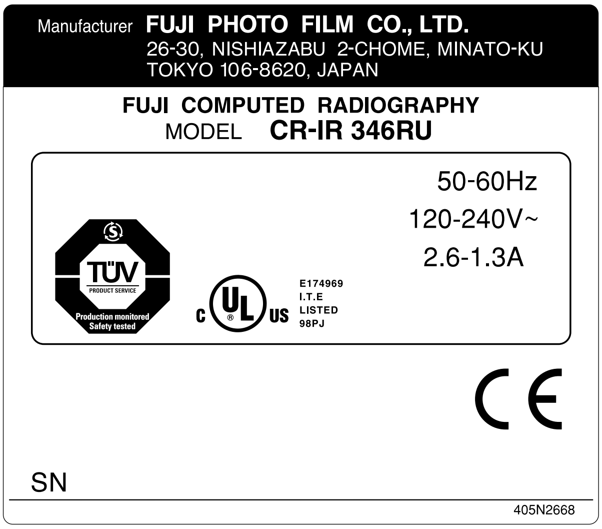
ELECTRICAL RATING
INPUT 1-PHASE 50-60Hz
100V~
MAX. INPUT CURRENT 3A

SN

405N2887

FR6H0023.EPS

- For use outside Japan



Manufacturer **FUJI PHOTO FILM CO., LTD.**
26-30, NISHIAZABU 2-CHOME, MINATO-KU
TOKYO 106-8620, JAPAN

**FUJI COMPUTED RADIOGRAPHY**
MODEL **CR-IR 346RU**

50-60Hz
120-240V~
2.6-1.3A

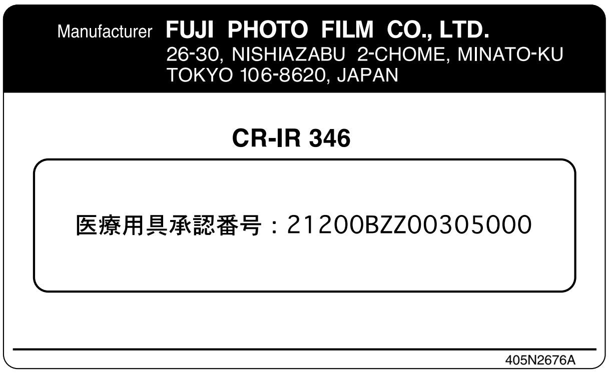
E174969
I.T.E
LISTED
98PJ

SN

405N2668

FR6H0024.EPS

### ● Pharmaceutical Label



Manufacturer **FUJI PHOTO FILM CO., LTD.**
26-30, NISHIAZABU 2-CHOME, MINATO-KU
TOKYO 106-8620, JAPAN

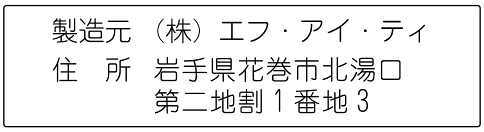
**CR-IR 346**

医療用具承認番号：21200BZZ00305000

405N2676A

FR6H0026.EPS

### ● Manufacturer Label



製造元　（株）エフ・アイ・ティィ
住　所　岩手県花巻市北湯口
第二地割１番地３

FR6H0025.EPS

# 3. Specifications of the Machine

## 3.1 Product Abbreviations

| Product abbreviations | Items | Qty. | Remarks |
|---|---|---|---|
| CR IR346 RU#<br>(for use in Japan) | Machine-specific data FD<br>CD-ROM (for RU)<br>Label<br>Label<br>Fuse set<br>Ferrite bead | 1<br>1<br>1<br>1<br>1<br>1 | 3.5-inch/1.44MB<br>For backup (installed prior to shipment)<br>One set (RU exposure marker precaution labels)<br>One set (inch and metric labels)<br>Spare<br>E04SR301334 |
| CR IR346 RU USA E<br>(for use in the U.S.) | Machine-specific data FD<br>CD-ROM (for RU)<br>Label<br>Label<br>Fuse set<br>Ferrite bead | 1<br>1<br>1<br>1<br>1<br>1 | 3.5-inch/1.44MB<br>For backup (installed prior to shipment)<br>One set (RU exposure marker precaution labels)<br>One set (inch and metric labels)<br>Spare<br>E04SR301334 |
| CR IR346 RU E<br>(for use in Europe) | Machine-specific data FD<br>CD-ROM (for RU)<br>Label<br>Label<br>Fuse set<br>Ferrite bead | 1<br>1<br>1<br>1<br>1<br>1 | 3.5-inch/1.44MB<br>For backup (installed prior to shipment)<br>One set (RU exposure marker precaution labels)<br>One set (inch and metric labels)<br>Spare<br>E04SR301334 |

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## 3.2 List of Optional Components

| Product abbreviations | Items | Qty. | Remarks |
|---|---|---|---|
| IR346 AC CORD 100-120V UL #(E) | RU power cable (for use in Japan and the U.S.) | 1 | Japan, U.S., Canada, etc. |
| IR346 AC CORD 200-240V E | RU power cable (for use in Europe, excluding the U.K.) | 1 | Germany, France, Spain, Sweden, etc. |
| IR346 AC CORD 200-240V UK E | RU power cable (for use in the U.K.) | 1 | U.K. |
| IR346 FLOOR FIX KIT #(E) | Retainer | 1 | For retaining the machine. |
| IR346 IIP CABLE #(E) | CL/RU connection cable | 1 | For direct connection without hub<br>Category 5 cable (cross), 1.95 m |
| IR346 STAND #(E) | Table | 1 | |
| IR346 CASSETTE POCKET #(E) | Table-attached cassette pocket | 1 | |

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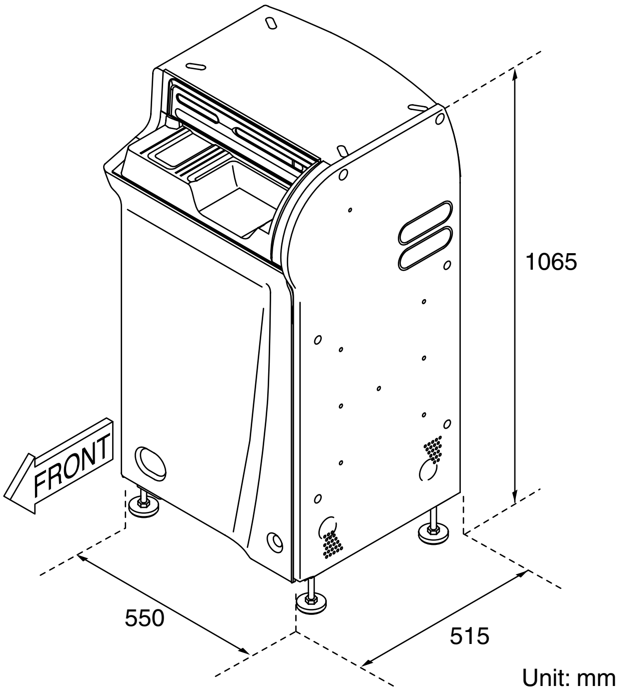
## 3.3 Dimensions, Weight, and Center of Gravity

### ■ Dimensions

W550xD515xH1065 (mm)



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### ■ Weight

155 kg approx.

### ■ Center of Gravity

Height: 500 mm

From the right-hand side: 275 mm

From the rear: 242 mm

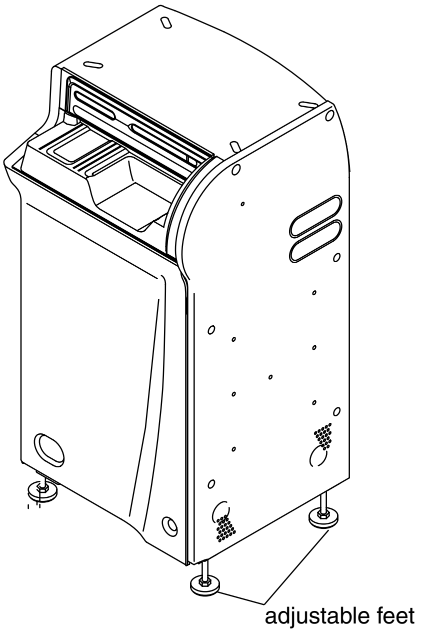
# 3.4 Machine Moving and Fixing Means

## ■ Moving Means

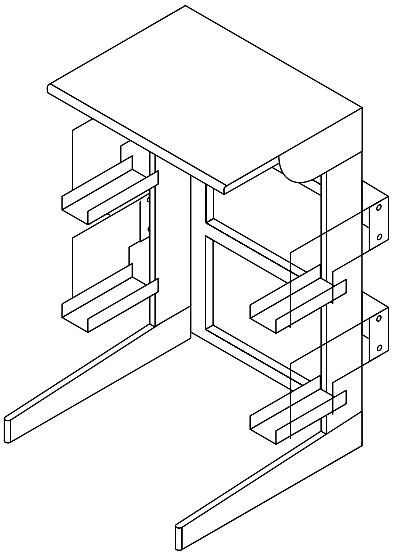
- Four two-wheel casters (variable direction/no brake)

## ■ Fixing Means

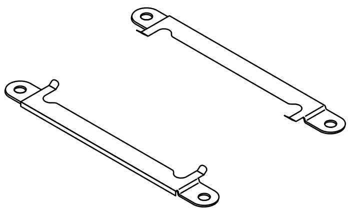
- Four adjustable feet



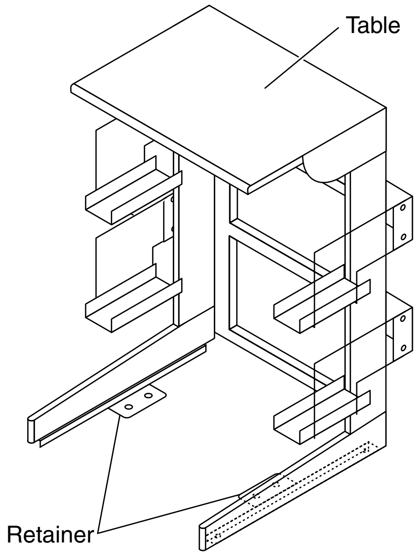
- One table (optional)



- Two machine retainers (optional)



- One table and two retainers (optional)



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# 3.5 Environmental Requirements

## ■ Atmospheric Requirements

| | Operation | Non-operation | During transit |
|---|---|---|---|
| **Temperature** | 15–30 °C | 0–45 °C | -10–50 °C |
| **Relative humidity** | 40–80 % | 10–90 % | 10–90 % |
| | | Without condensation | |
| **Atmospheric pressure** | 700–1,030 hPa | 500–1,030 hPa | |

The above environmental requirements during non-operation and during transit do not apply to IPs (Imaging Plates).

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## ■ Floor (Installation Area) Vibration Requirements

Frequency: 10-55 Hz

Amplitude: 0.0075 mm or less

## ■ Floor Levelness

10 mm/m (1/100 of inclination) or less for both front and rear and both right and left

## ■ Floor Flatness

10 mm or less

## ■ Variable Magnetic Field

0.3 gauss p-p or less

# 3.6 Electrical Specifications

### ■ Frequency

50Hz/60Hz, single-phase, common specification

### ■ Line Voltage

For use in Japan: 100 VAC ±10%

For use in the U.S.: 100-120 VAC ±10%

For use in Europe: 200-240 VAC ±10%

### ■ Power Capacity

0.4 kVA

### ■ Power Cord

3m, with 3P plug/connector

### ■ Rated Amperage

100 VAC, 50/60Hz: 3A

120-240 VAC, 50/60Hz: 2.6A-1.3A

### ■ Overload Protection

100 VAC, 50/60Hz: 10A

120-240 VAC, 50/60Hz: 10A

### ■ Power Consumption

Maximum operation: 230 W

Idling: 125 W

Standby: 100 W

### ■ Grounding (in Japan)

Use the power cable supplied with the machine, and securely insert the power plug into an indoor polarized receptacle.

The grounding required is Class D (former Class 3).

### ■ Grounding (outside Japan)

Use an optional power cable, and securely insert the power plug into an indoor polarized receptacle.

# 3.7 Other Specifications

## ■ Maximum Heat Generation

Standby: 125 wh

Operation: 230 wh

## ■ Noise

Standby: 40 dB or less

Operation: 60 dB or less

Single-shot noise: 70 dB or less

## ■ Warm-up Time

● Setup without power interlink

(when the CR-IR346RU is booted in standalone fashion)

1 min approx.

● Setup with RU power interlink

(when the CR-IR346RU is booted with the CR-IR346CL)

3 min approx.

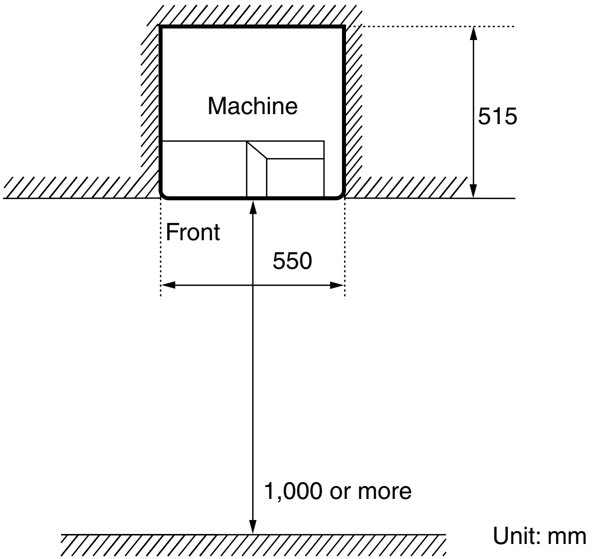
## 3.8 Installation and Servicing Spaces

◇ ***REFERENCE*** ◇

*The machine may be placed with its right and left sides and its rear against the walls. However, the front of the machine requires a space of 1,000 mm or more, and it is necessary to secure sufficient space around the machine to rotate it.*

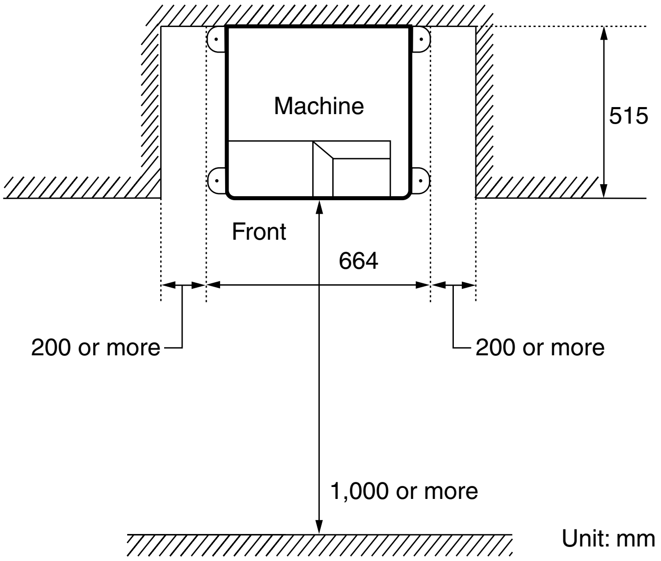
### ■ Installation Space

#### ● When the machine is secured by the adjustable feet


Machine
515
Front
550
1,000 or more
Unit: mm

FR6H0020.EPS

#### ● When the machine is secured by the retainers


Machine
515
Front
664
200 or more
200 or more
1,000 or more
Unit: mm

FR6H0017.EPS

- **When the machine is secured by the table and table retainers (without cassette pocket)**

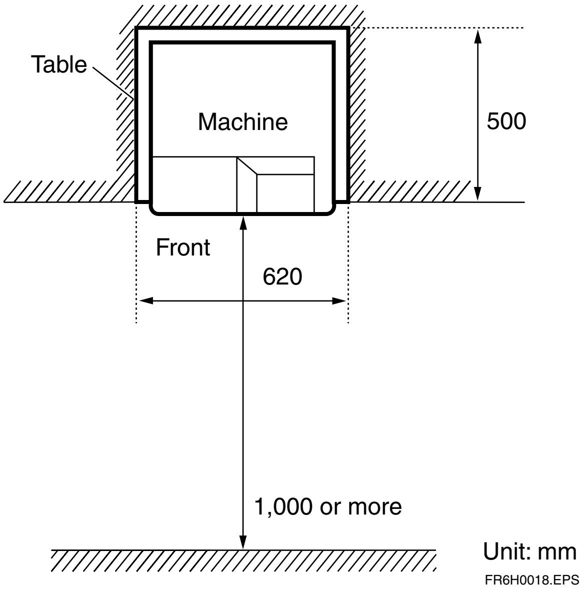


Table
Machine
500
Front
620
1,000 or more
Unit: mm
FR6H0018.EPS

- **When the machine is secured by the table (full option) and table retainers (with cassette pocket)**

### ◇ *REFERENCE* ◇

*If the user uses small-size cassettes, the machine and table should be moved forward until the cassette is readily accessible.*

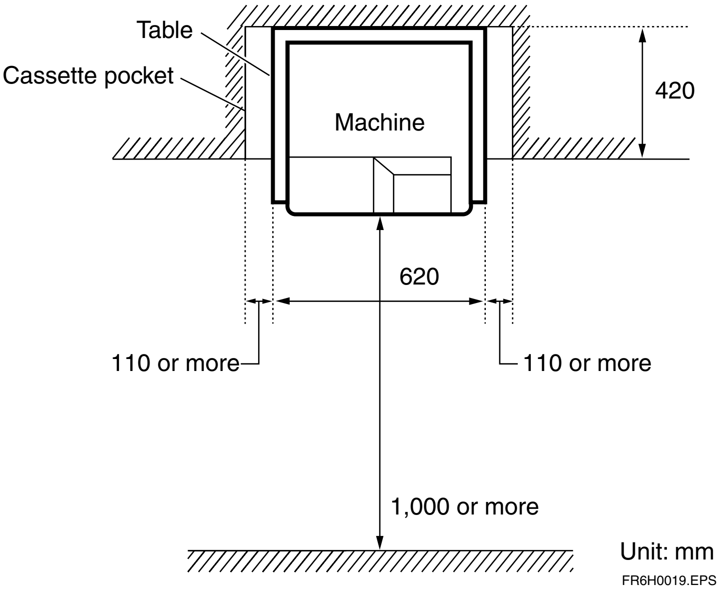
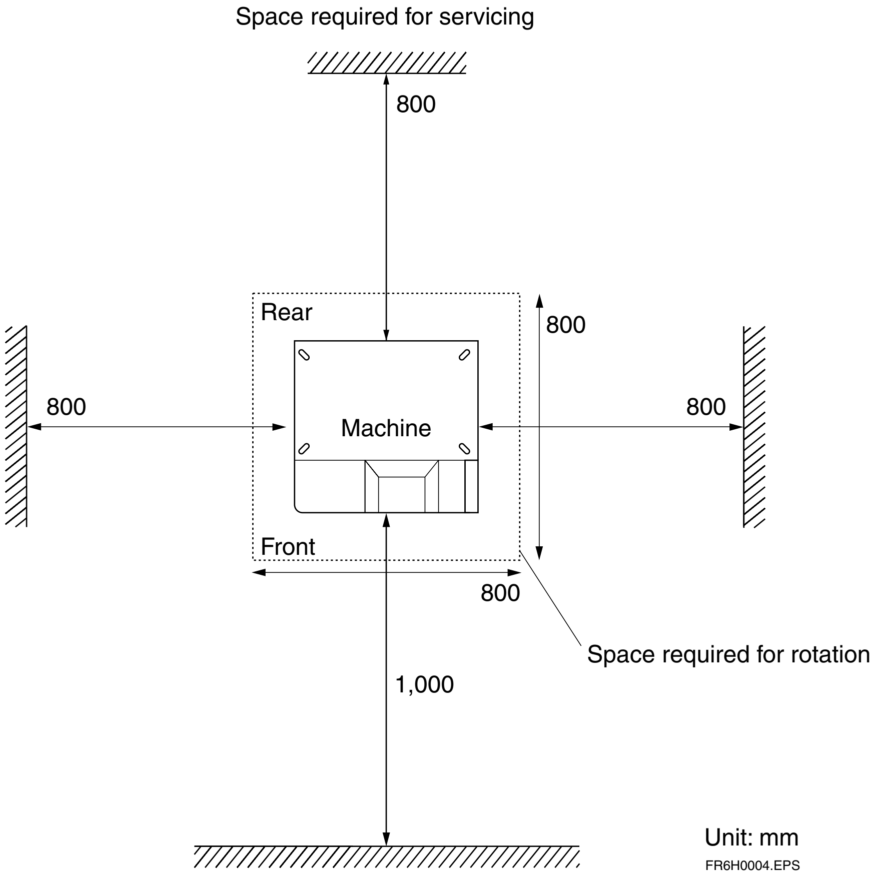


Table
Cassette pocket
Machine
420
620
110 or more
110 or more
1,000 or more
Unit: mm
FR6H0019.EPS

## ■ Servicing Space

Sufficient space should be secured for servicing, as indicated below


Space required for servicing
800
Rear
800
800
Machine
800
Front
800
Space required for rotation
1,000
Unit: mm
FR6H0004.EPS

### ◇ *REFERENCE* ◇

*If there is sufficient space to rotate the machine (800 mm around it), installation may be performed with 1,000 mm or more space secured only on one side.*

# CR-IR346RU Service Manual

## Machine Description (MD)

# CR-IR346RU Service Manual – Contents

## Machine Description (MD)

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   - 1.2 System Configuration ........ MD-2
   - 1.3 Overall Machine Configuration and Component Names ........ MD-4
   - 1.4 Machine Components ........ MD-6
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## Control Sheet

| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10/10/2000 | 00 | New release (FM2887) | All pages |
| 08/30/2001 | 01 | Revisions associated with release of version A05 (FM3058) | MD-1–3, 5, 9–11, 14–21, 21.1–21.4, 32, 42, 43, 46, 47, 49, 50 |
| 02/20/2002 | 05 | Revisions associated with release of version A07 (FM3328) | MD-1–3, 13–39, 39.1–39.4, 52, 56, 186 |

# 1. Machine Overview

## 1.1 Features

### Features of the Machine

- The CR-IR346RU is built in a more compact body designed with smaller scanning optics and light-collecting units.
- The machine is network connectable via TCP/IP.
- A commonly available power source may be used to supply power to the machine.

## 1.2 System Configuration

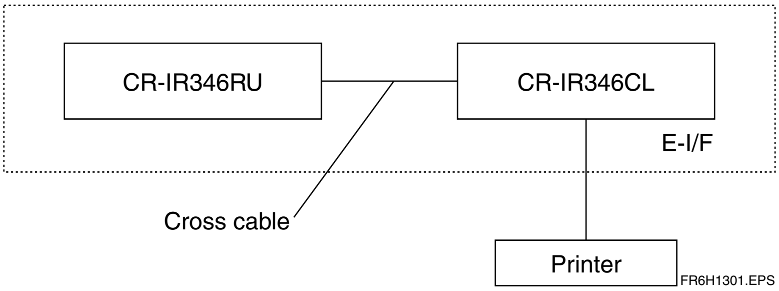
The CR-IR346RU may be configured in several combinations.

Basic system configuration examples are described here.

### System Configuration Example (1)

The machine is directly connected to the CL.

In this case, the CL may be connected only to a printer.



## ■ System Configuration Example (2)

The machine is connected to the CL via a network.

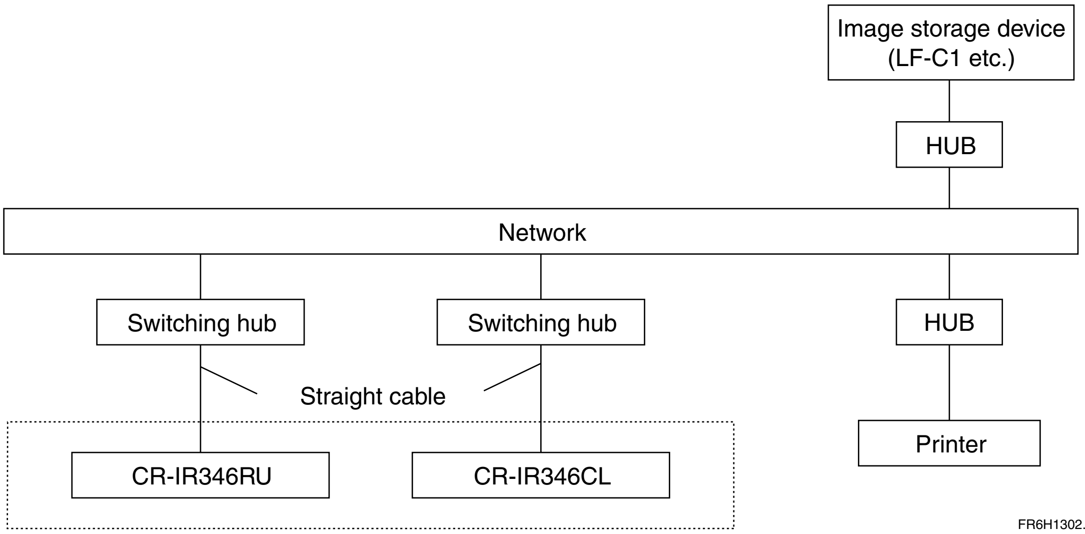
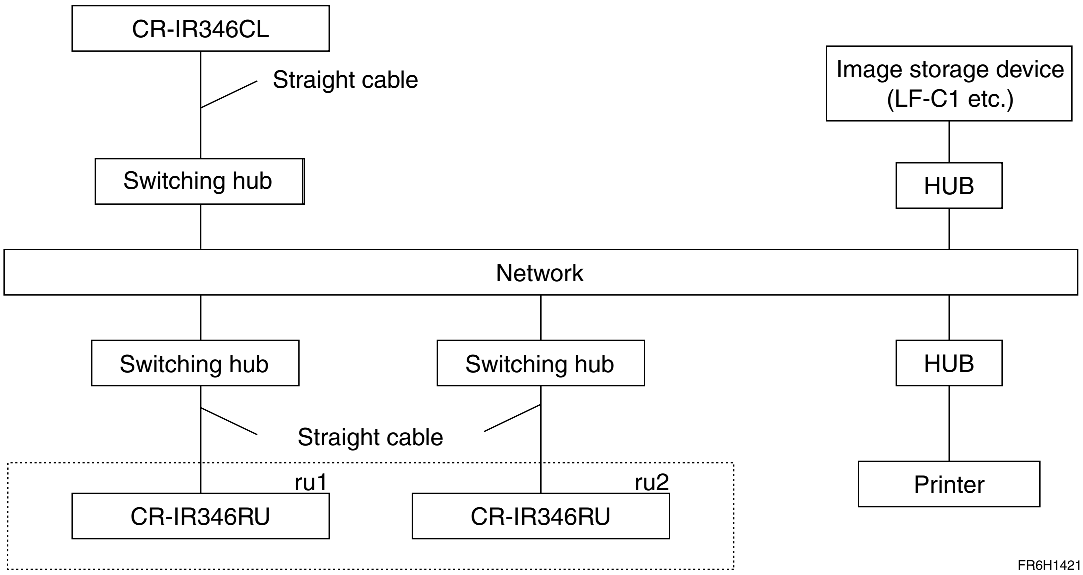


Image storage device
(LF-C1 etc.)
HUB
Network
Switching hub
Switching hub
HUB
Straight cable
Printer
CR-IR346RU
CR-IR346CL

FR6H1302.EPS

## ■ System Configuration Example (3): RU Software A05 or Later

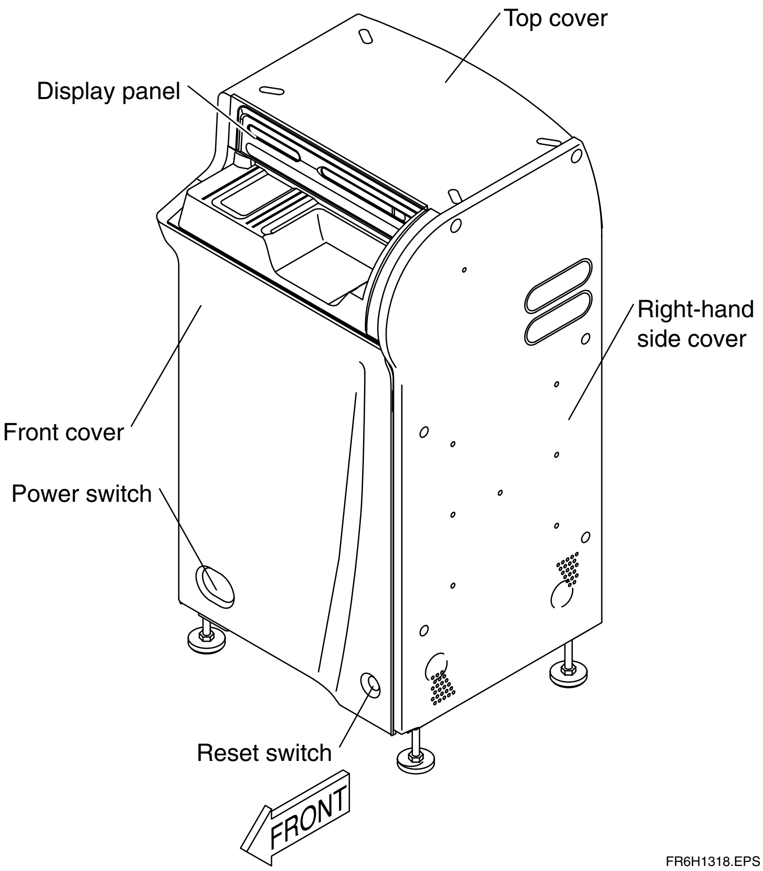
A plurality of the machines (up to three) are connected to a single CL via a network.


CR-IR346CL
Straight cable
Image storage device
(LF-C1 etc.)
Switching hub
HUB
Network
Switching hub
Switching hub
HUB
Straight cable
ru1
ru2
CR-IR346RU
CR-IR346RU
Printer

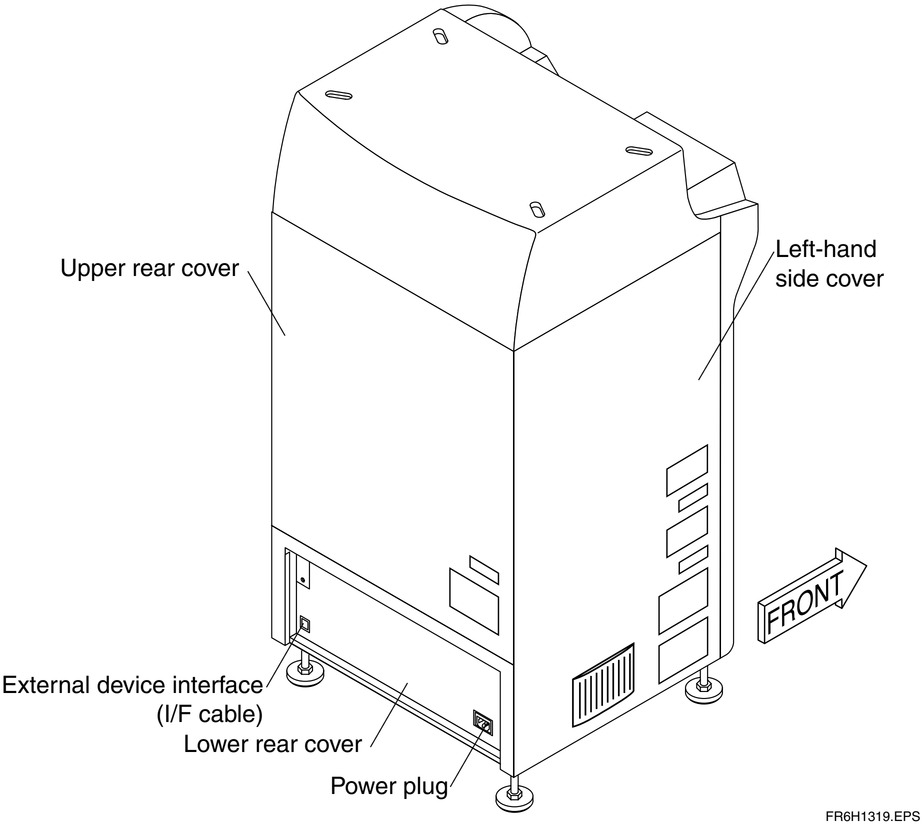
FR6H1421.EPS

# 1.3 Overall Machine Configuration and Component Names

## ■ External View of Machine

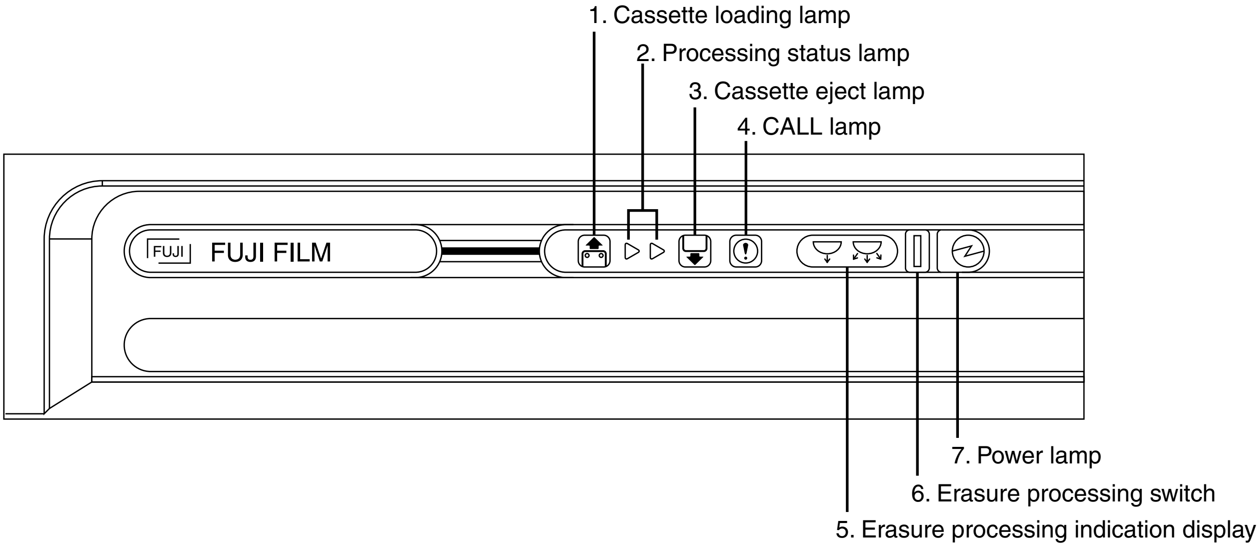

Top cover
Display panel
Right-hand
side cover
Front cover
Power switch
Reset switch
FRONT

FR6H1318.EPS


Upper rear cover
Left-hand
side cover
FRONT
External device interface
(I/F cable)
Lower rear cover
Power plug

FR6H1319.EPS

## ■ Display Panel Indicators


1. Cassette loading lamp
2. Processing status lamp
3. Cassette eject lamp
4. CALL lamp
FUJI
FUJI FILM
7. Power lamp
6. Erasure processing switch
5. Erasure processing indication display

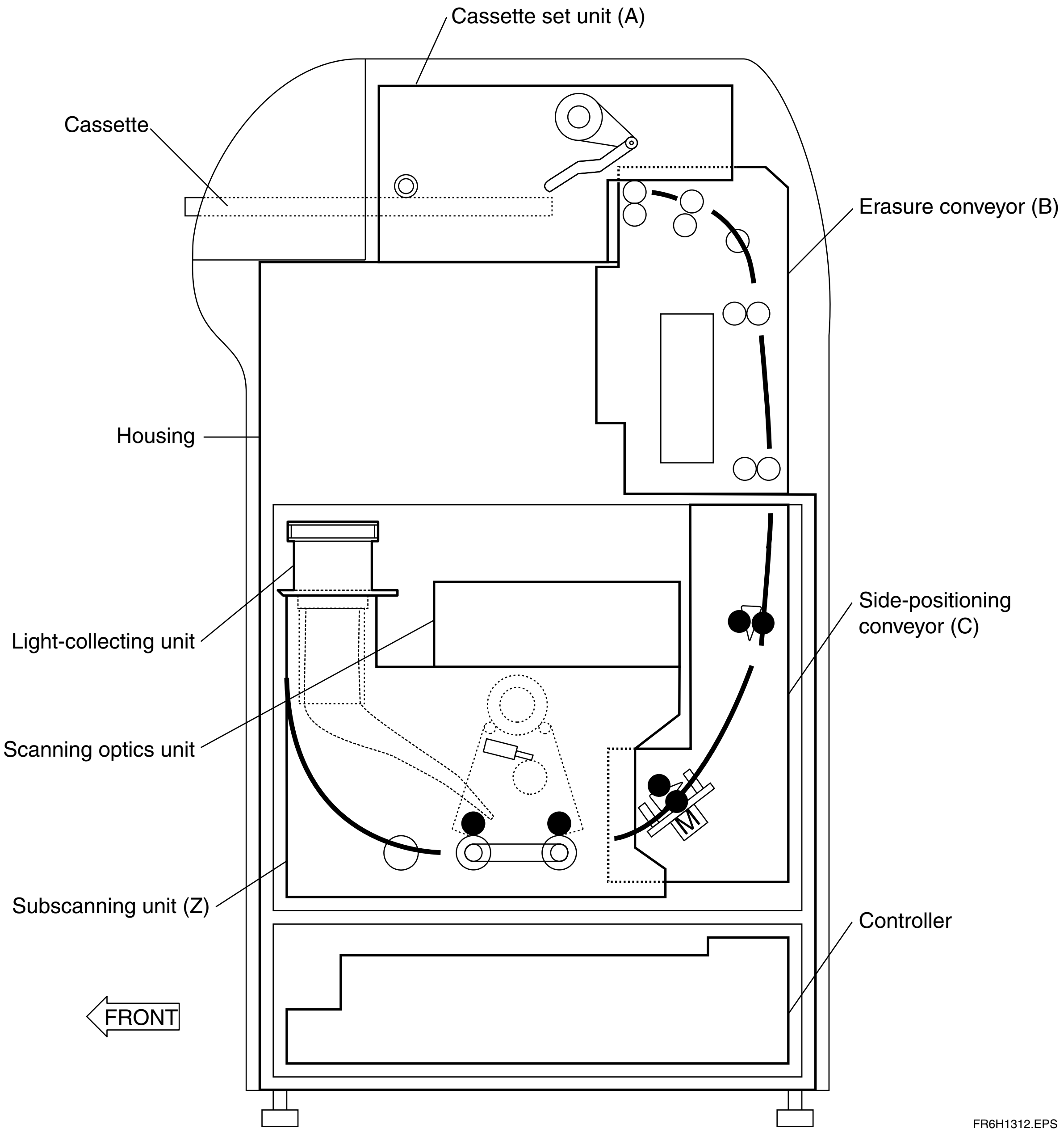
FR6H1305.EPS

| No. | Name | | Lighting | Functional description |
|---|---|---|---|---|
| 1 | Cassette loading lamp | | Lit in green | It is lit when the machine boots up normally. It also indicates that the cassette is loadable. |
| 2 | Processing status lamp | | Blink in green | It indicates the processing status of the IP within the machine. |
| 3 | Cassette eject lamp | | Lit in green | It indicates that the cassette processed may be ejected. |
| 4 | CALL lamp | | Lit in yellow | When the CALL lamp is lit, an audible alarm is generated, with a popup window displayed on the screen of the CR-IR346CL. The message (instruction) given in the window should be observed to perform the procedures as appropriate. |
| 5 | Erasure processing status display | ▽↙↓↘ | Lit in green | It is lit when the primary erasure processing mode is selected. |
| | | ▽↓ | Lit in green | It is lit when the secondary erasure processing mode is selected. |
| 6 | Erasure processing switch | | ——— | • This switch is used to execute erasure processing (either primary or secondary erasure) on the IP within the cassette. The switch toggles from read processing mode to primary erasure processing mode to secondary erasure processing mode and back to read processing mode.<br>• By pressing this switch together with the power switch, the network-related setting of the RU's configuration settings is temporarily initialized. This initialization setup will be canceled by resetting the RU. (This feature is applicable to software version A03 or later.) |
| 7 | POWER lamp | | Lit in green | It is lit when power is turned ON. |

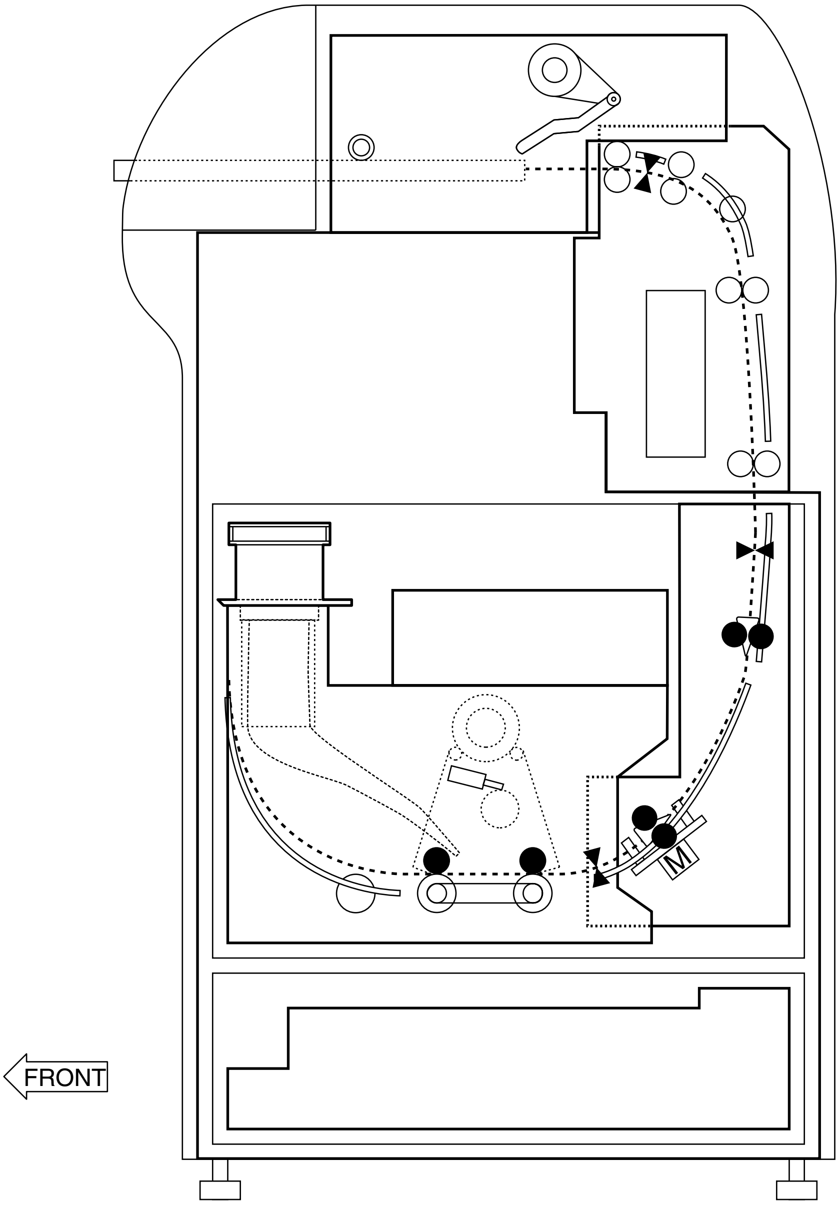
TR6H1301.EPS

# 1.4 Machine Components

## 1.4.1 Unit Locations


Cassette set unit (A)
Cassette
Erasure conveyor (B)
Housing
Light-collecting unit
Side-positioning conveyor (C)
Scanning optics unit
M
Subscanning unit (Z)
Controller
FRONT
FR6H1312.EPS

## 1.4.2 Roller Locations and Conveyance Paths

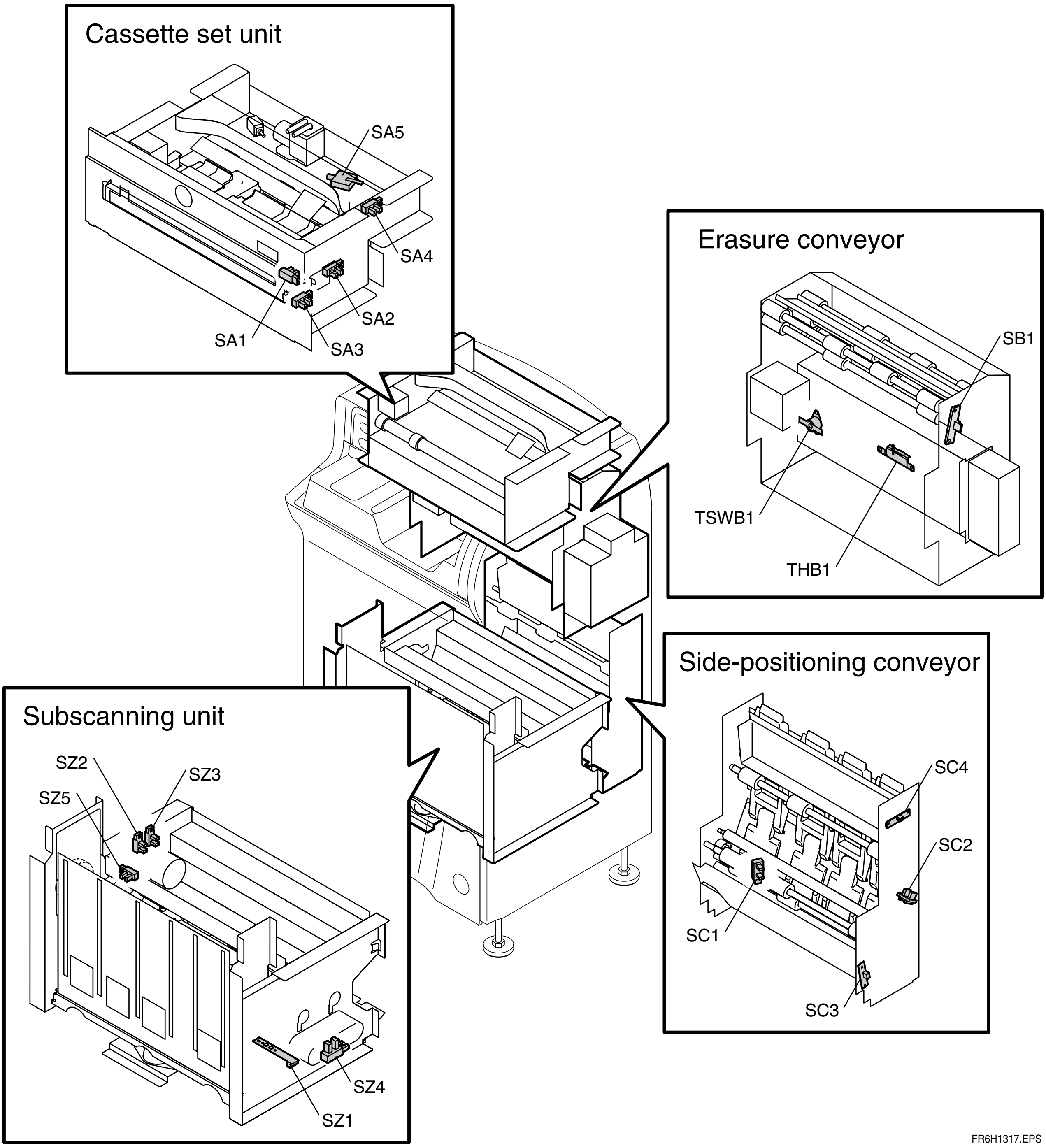


● : Grip roller
- - - : Conveyance path
▶◀ : IP conveyance sensor

FR6H1313.EPS

## 1.4.3 I/O Locations and Functional Descriptions

### ■ I/O Locations (Sensors and Thermistors)


Cassette set unit
SA5
SA4
SA2
SA1
SA3
Erasure conveyor
SB1
TSWB1
THB1
Side-positioning conveyor
SC4
SC2
SC1
SC3
Subscanning unit
SZ2
SZ3
SZ5
SZ4
SZ1

FR6H1317.EPS

## ■ I/O List (Sensors and Thermistors)

### ● Cassette set unit

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA1 | Cassette eject sensor | PI (5mm) | Detects that the cassette is ejected. |
| SA2 | Cassette IN sensor | PI (5mm) | Detects that the cassette is inserted. |
| SA3 | Hold sensor | PI (5mm) | Detects that the cassette is in the hold state. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup arm is in its home position. |
| SA5 | Suction sensor |  | Detects that the suction cup sucks the IP. |

TR6H1302.EPS

### ● Erasure conveyor

| Symbol | Name | Type | Function |
|---|---|---|---|
| SB1 | IP sensor | PI (19mm) | Detects that the IP is present due to conveyance.<br>It also measures the elapsed time for the IP. |
| THB1 | Lamp temparature sensor | Thermistor | Detects the temperature within the erasure lamp assembly. |
| TSWB1 | Safety thermostat operation sensor | Thermal switch | Detects the temperature at the reflection plate of the erasure unit. |

TR6H1303.EPS

### ● Side-positioning conveyor

| Symbol | Name | Type | Function |
|---|---|---|---|
| SC1 | Side-positioning HP sensor | PI (5mm) | Detects that the side-positioning mechanism is in its home position. |
| SC2 | Grip HP sensor | PI (5mm) | Detects that the grip roller is in its home position. |
| SC3 | IP sensor | PI (19mm) | Detects that the IP is present due to conveyance.<br>It also detects IP positioning during side-positioning operation. |
| SC4 | IP sensor | PI (19mm) | Detects that the IP is present due to conveyance.<br>It also detects IP positioning during erasure operation. |

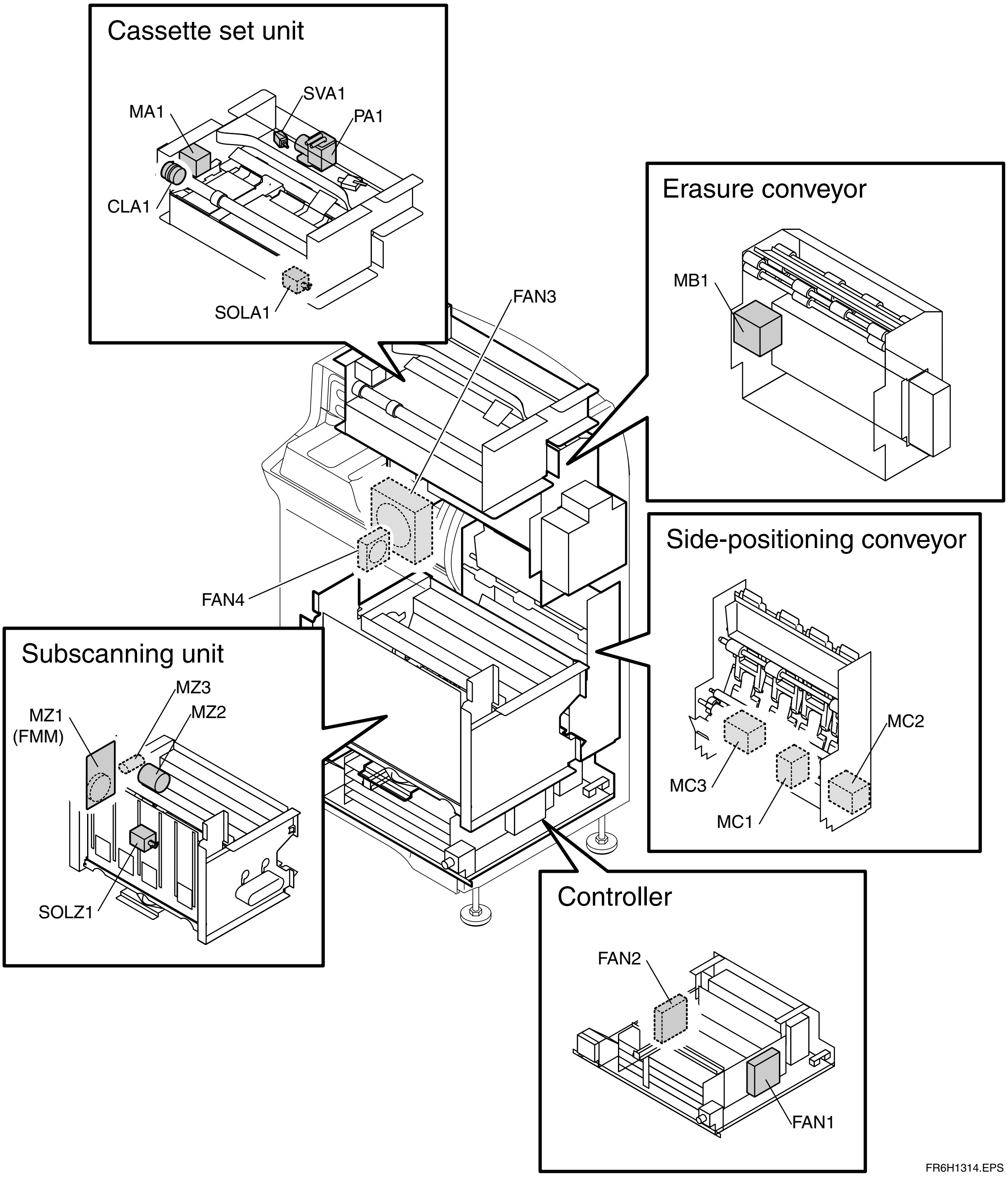
TR6H1304.EPS

### ● Subscanning unit

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ1 | IP leading-edge sensor | Laser light receptor | Detects the leading edge of the IP during reading. |
| SZ2 | Driving-side grip operation sensor | PI (5mm) | Detects the driving-side grip condition. |
| SZ3 | Driven-side grip operation sensor | PI (5mm) | Detects the driven-side grip condition. |
| SZ4 | IP stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SZ5 | Dust removal HP sensor | PI (5mm) | Detects that the dust removal brush is in its home position. |

TR6H1305.EPS

## ■ I/O Locations (Motors, Clutch, Solenoids, Pump, Valves, Solenoid Valve, Fans)


Cassette set unit
SVA1
MA1
PA1
CLA1
SOLA1
Erasure conveyor
MB1
FAN3
FAN4
Side-positioning conveyor
MC2
MC3
MC1
Subscanning unit
MZ3
MZ1
(FMM)
MZ2
SOLZ1
Controller
FAN2
FAN1
FR6H1314.EPS

## ■ I/O List (Motors, Clutch, Solenoids, Pump, Valves, Solenoid Valve, Fans)

### ● Cassette set unit

| Symbol | Name | Type | Function |
|---|---|---|---|
| MA1 | Suction cup drive motor | Pulse motor | Drives the suction cup arm and ejects the cassette when the clutch is turned ON. |
| PA1 | Suction pump | DC pump | Sucks the IP. |
| SVA1 | Leak valve | Solenoid valve | Leaks the IP. |
| SOLA1 | Cassette hold solenoid | Power-down solenoid | Holds/releases the hold pin. |
| CLA1 | Cassette ejection clutch | Clutch | Interlinks the motor and roller when the cassette is ejected. |

TR6H1306.EPS

### ● Erasure conveyor

| Symbol | Name | Type | Function |
|---|---|---|---|
| MB1 | Transport motor | Pulse motor | Conveys the IP. |

TR6H1307.EPS

### ● Side-positioning conveyor

| Symbol | Name | Type | Function |
|---|---|---|---|
| MC1 | Side-positioning motor | Pulse motor | Drives the side-positioning mechanism. |
| MC2 | Grip motor | Pulse motor | Grips/releases the grip roller. |
| MC3 | Transport motor | Pulse motor | Conveys the IP. |

TR6H1308.EPS

### ● Subscanning unit

| Symbol | Name | Type | Function |
|---|---|---|---|
| MZ1 | Subscanning motor | FFM | Conveys the IP during reading. |
| MZ2 | Grip drive motor | DC motor | Grips/releases the driven-side grip roller and driving-side grip roller. |
| MZ3 | Dust removal motor | Brushless DC motor | Removes dust deposited on the light-collecting guide and mirror. |
| SOLZ1 | IP stopper solenoid | Power-down solenoid | Stops/releases the IP conveyance. |

TR6H1309.EPS

### ● Controller

| Symbol | Name | Type | Function |
|---|---|---|---|
| FAN1 | Board cooling fan | DC fan | Cools the controller boards (outtake) |
| FAN2 | Board cooling fan | DC fan | Cools the controller boards (intake) |

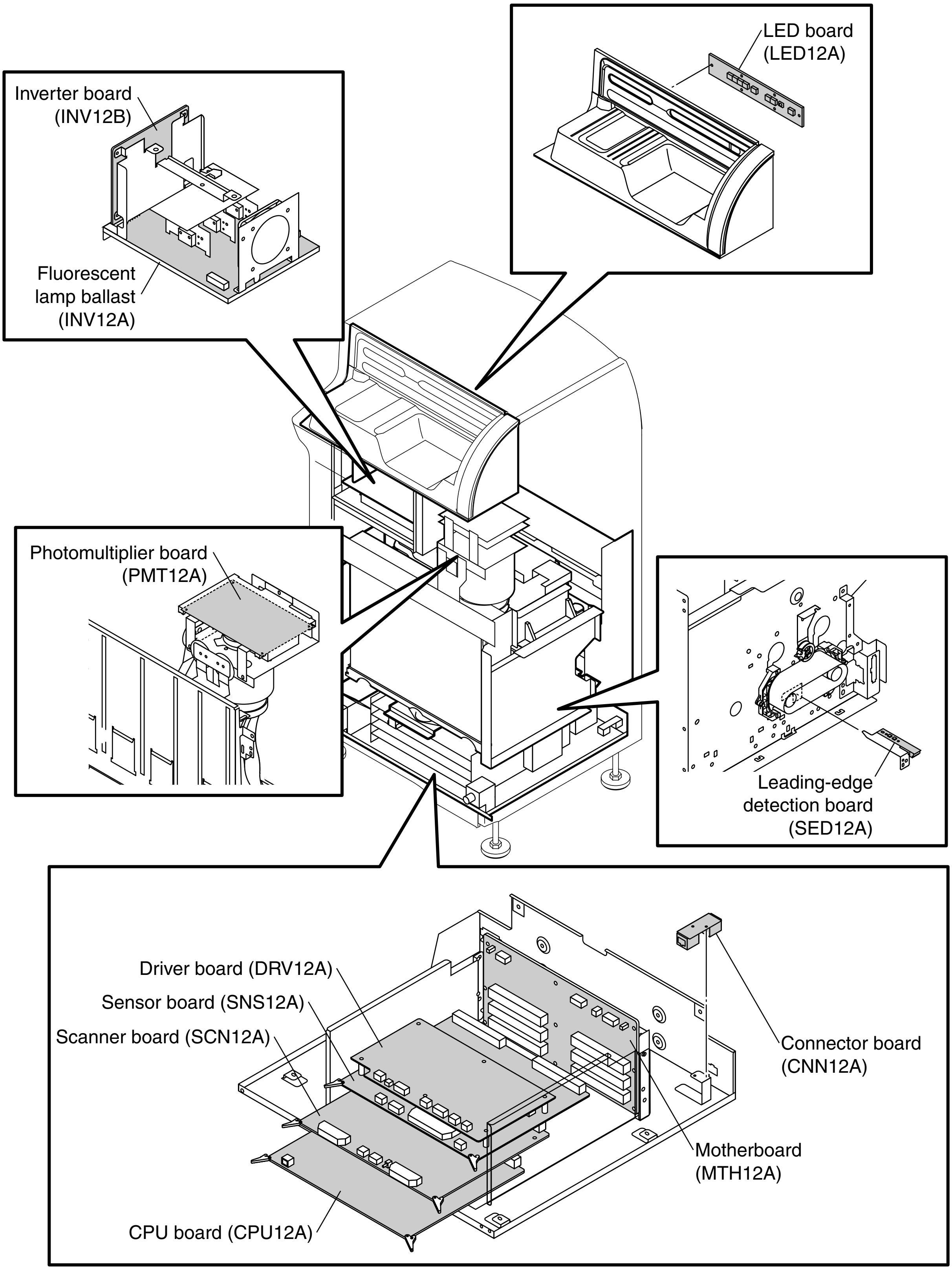
TR6H1310.EPS

### ● Housing

| Symbol | Name | Type | Function |
|---|---|---|---|
| FAN3 | Erasure unit cooling fan | DC fan | Cools the erasure unit. |
| FAN4 | Inverter cooling fan | DC fan | Cools the fluorescent lamp ballast and inverter board. |

TR6H1311.EPS

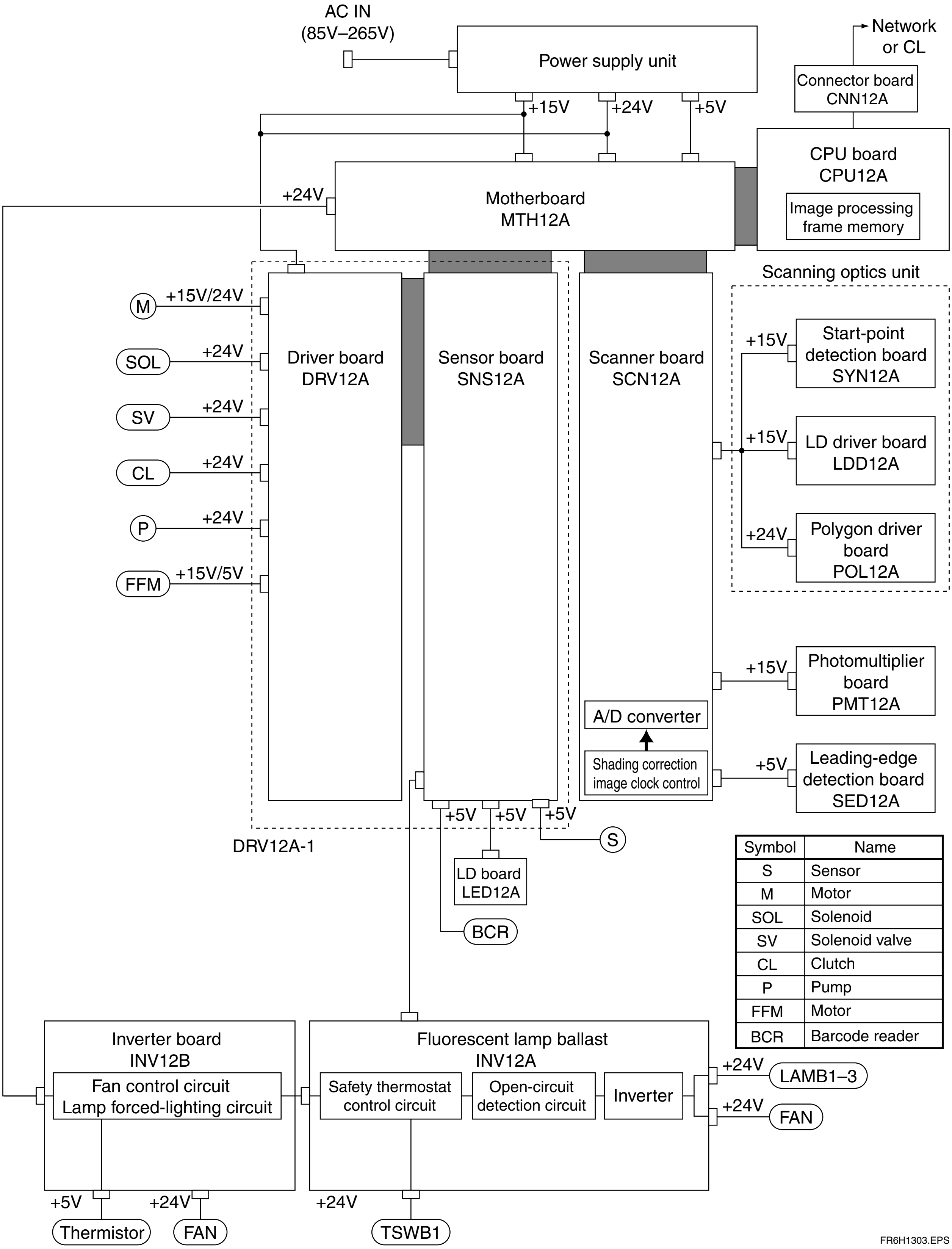
## 1.4.4 Board Locations


LED board
(LED12A)
Inverter board
(INV12B)
Fluorescent
lamp ballast
(INV12A)
Photomultiplier board
(PMT12A)
Leading-edge
detection board
(SED12A)
Driver board (DRV12A)
Sensor board (SNS12A)
Scanner board (SCN12A)
Connector board
(CNN12A)
Motherboard
(MTH12A)
CPU board (CPU12A)

FR6H1316.EPS

## 1.5 System Block Diagram

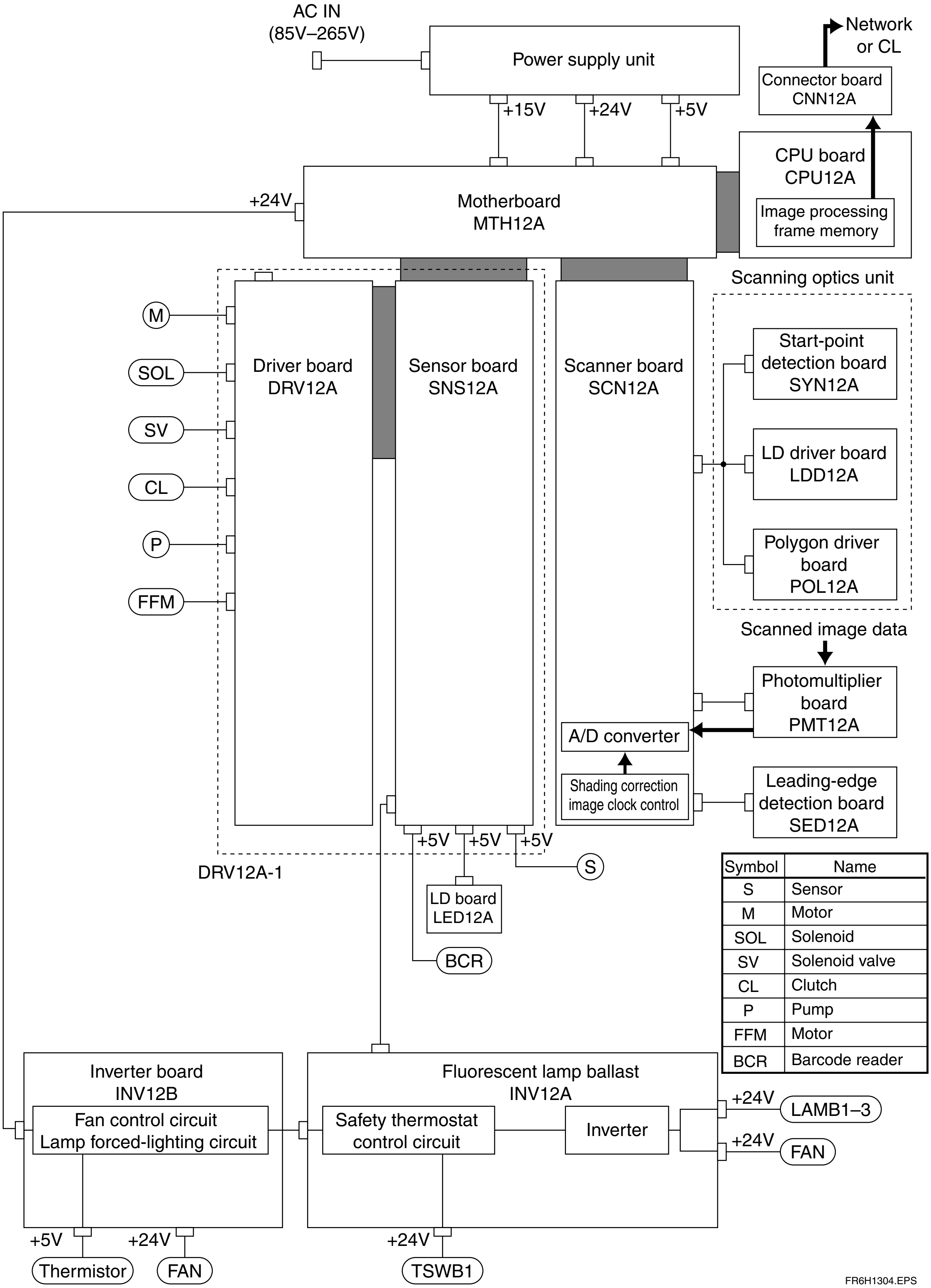
### ■ Power Supply System


AC IN
(85V–265V)
Power supply unit
+15V
+24V
+5V
Network or CL
Connector board CNN12A
CPU board CPU12A
Image processing frame memory
Motherboard MTH12A
+24V
Scanning optics unit
M
+15V/24V
SOL
+24V
SV
+24V
CL
+24V
P
+24V
FFM
+15V/5V
Driver board DRV12A
Sensor board SNS12A
Scanner board SCN12A
+15V
Start-point detection board SYN12A
+15V
LD driver board LDD12A
+24V
Polygon driver board POL12A
+15V
Photomultiplier board PMT12A
A/D converter
Shading correction image clock control
+5V
Leading-edge detection board SED12A
+5V
+5V
+5V
S
DRV12A-1
LD board LED12A
BCR
Inverter board INV12B
Fan control circuit
Lamp forced-lighting circuit
Fluorescent lamp ballast INV12A
Safety thermostat control circuit
Open-circuit detection circuit
Inverter
+24V
LAMB1–3
+24V
FAN
+5V
+24V
Thermistor
FAN
+24V
TSWB1

| Symbol | Name |
|---|---|
| S | Sensor |
| M | Motor |
| SOL | Solenoid |
| SV | Solenoid valve |
| CL | Clutch |
| P | Pump |
| FFM | Motor |
| BCR | Barcode reader |

FR6H1303.EPS

## ■ Signal System


AC IN
(85V–265V)
Power supply unit
+15V
+24V
+5V
Network
or CL
Connector board
CNN12A
CPU board
CPU12A
Image processing
frame memory
+24V
Motherboard
MTH12A
Scanning optics unit
M
SOL
SV
CL
P
FFM
Driver board
DRV12A
Sensor board
SNS12A
Scanner board
SCN12A
Start-point
detection board
SYN12A
LD driver board
LDD12A
Polygon driver
board
POL12A
Scanned image data
Photomultiplier
board
PMT12A
A/D converter
Shading correction
image clock control
Leading-edge
detection board
SED12A
+5V
+5V
+5V
S
DRV12A-1
LD board
LED12A
BCR
Inverter board
INV12B
Fan control circuit
Lamp forced-lighting circuit
Fluorescent lamp ballast
INV12A
Safety thermostat
control circuit
Inverter
+24V
LAMB1–3
+24V
FAN
+5V
+24V
Thermistor
FAN
+24V
TSWB1
FR6H1304.EPS

| Symbol | Name |
|---|---|
| S | Sensor |
| M | Motor |
| SOL | Solenoid |
| SV | Solenoid valve |
| CL | Clutch |
| P | Pump |
| FFM | Motor |
| BCR | Barcode reader |

# 2. Descriptions of Software Control

## 2.1 Relationship between RU and CL

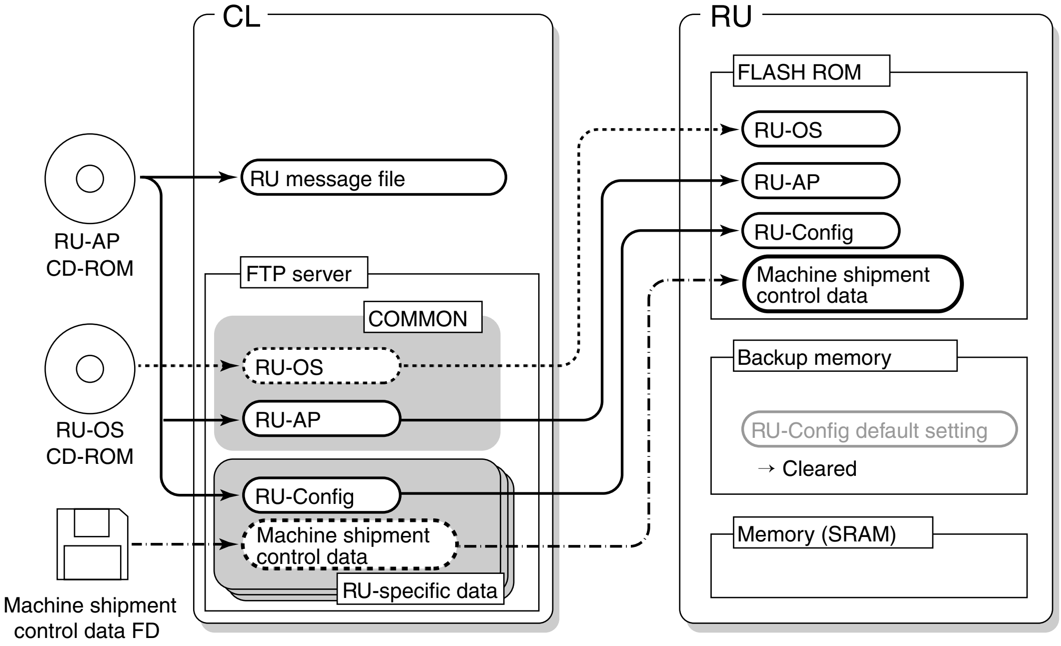
This chapter describes exchanging of data between CL and RU, which is implemented when the CL is connected to the RU.

**◆ *NOTE* ◆**

*In this chapter, “application”, “operating system”, and “RU configuration” are abbreviated as AP, OS, and RU-Config, respectively.*

### 2.1.1 RU Software (AP/OS) and Data Flow

**■ Data flow in installation process**


CL
RU
RU-AP CD-ROM
RU-OS CD-ROM
Machine shipment control data FD
RU message file
FTP server
COMMON
RU-OS
RU-AP
RU-Config
Machine shipment control data
RU-specific data
FLASH ROM
RU-OS
RU-AP
RU-Config
Machine shipment control data
Backup memory
RU-Config default setting
→ Cleared
Memory (SRAM)

Those marked by ⬚ represent data that is temporarily stored in the FTP server, exclusively for transferring the data to the RU.
Those marked by ▭ represent data that is always stored for comparison with the data in the RU’s flash ROM.

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### ● RU-AP (solid-line arrow)

When RU-AP is installed, the RU-AP, RU-Config, and RU message file are copied to the CL.

The RU-AP and RU-Config are copied to the flash ROM via the network.

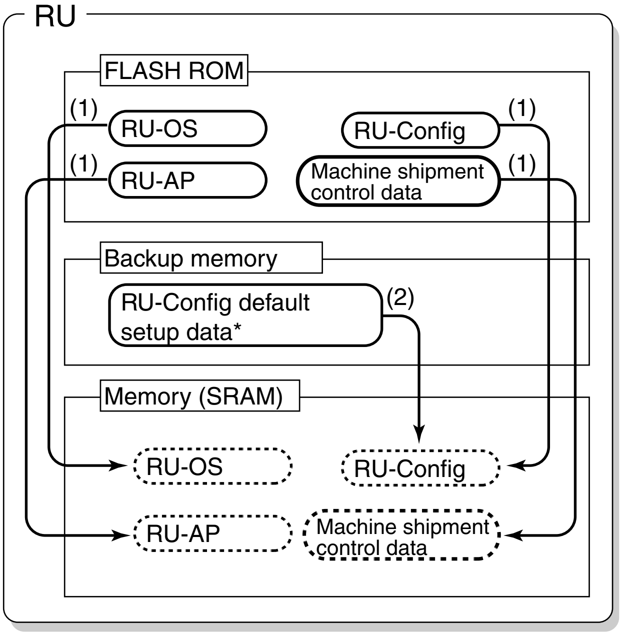
**◇ *REFERENCE* ◇**

*The RU message file is a file that contains details on the RU's error information. It is used to cause the error code and error information detail to be displayed on the CL monitor by using, as a key, the error code generated on the RU.*

### ● RU-OS (dotted-line arrow)/machine shipment control data (alternate-long-and-short-dash-line arrow)

The RU-OS and machine shipment control data are copied to the RU's flash ROM via the FTP server of the CL.

## ■ Data flow in RU boot


RU
FLASH ROM
(1)
RU-OS
RU-Config
(1)
(1)
RU-AP
Machine shipment control data
(1)
Backup memory
RU-Config default setup data*
(2)
Memory (SRAM)
RU-OS
RU-Config
RU-AP
Machine shipment control data

* It includes network setup items
(such as default IP addresses of the RU and CL, etc.).

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When the RU is booted, the data in the flash ROM is copied into the memory (SDRAM) (arrow (1)).

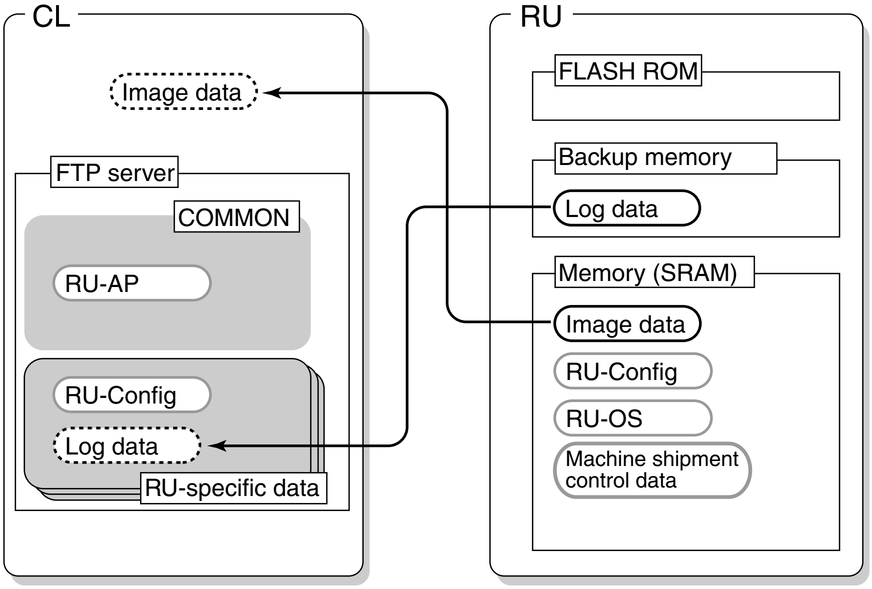
If the default setup data of the RU-Config resides in the backup memory, that data is used to overwrite the RU-Config in the memory (arrow (2)).

**◇ *REFERENCE* ◇**

*Normally, the backup memory does not contain the default setup data of the RU-Config. Only when one of the following operations is performed, it is written into the backup memory.*

- *When the RU is powered ON while holding down the <erasure processing> switch.*
- *When "Temporary Setting" for the backup memory is performed in the RU's Maintenance Utility.*

## ■ Data flow in normal process


CL
Image data
FTP server
COMMON
RU-AP
RU-Config
Log data
RU-specific data
RU
FLASH ROM
Backup memory
Log data
Memory (SRAM)
Image data
RU-Config
RU-OS
Machine shipment control data

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### ● Image data

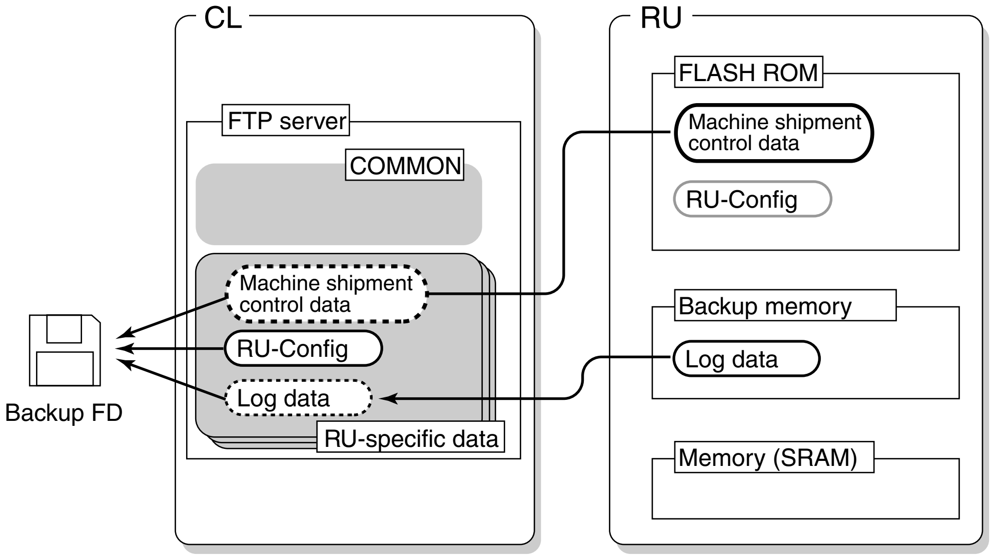
The image data scanned from the IP is temporarily stored in the SRAM, and then transferred to the CL via the network.

### ● Log data

- The log data is written, upon shutdown processing or upon occurrence of a FATAL error, from the RU BACKUP MEMORY (SAM) to the FTP server.
- The RU BACKUP MEMORY (SAM) retains the log data that is logged while the RU is powered ON.
- The FTP server retains a certain amount of the log data, which is overwritten by newer data on a first-in-first-out basis when a predetermined level is exceeded.

## ■ Data flow in backup and restore

To backup and restore various types of data for the RU, RU M-Utility should be used.


CL
FTP server
COMMON
Machine shipment control data
RU-Config
Log data
RU-specific data
Backup FD
RU
FLASH ROM
Machine shipment control data
RU-Config
Backup memory
Log data
Memory (SRAM)

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### ● Log data

A set of log data stored in the backup memory is backed up to the FD in accordance with the flow as illustrated above.

Note, however, that the log data cannot be restored.

### ● RU-Config

The RU-Config stored in the FTP server is backed up to the FD. For restore, the data in the FD is copied to the FTP server.

### ● Machine shipment control data

The machine shipment control stored in the flash ROM is backed up to the FD in accordance with the flow as illustrated above.

For restore, it is copied to the flash ROM via the FTP server.

## 2.1.2 Mechanism for Updating RU-AP and RU-Config

### ■ How to Write the Flash ROM of the RU

The RU itself is not equipped with any input device that allows for directly overwriting the RU-AP or RU-Config into the flash ROM of the RU. Thus, in order to overwrite the flash ROM of the RU, a personal computer (PC) connected to the network should be used.

Basically, for CL-RU connection, the CL-PC should be employed.

**◇ *REFERENCE* ◇**

*For data communication between the RU and CL, the FTP server (one of network protocols for exchanging files between terminals) is used.*

### [1] Difference between update mechanisms depending on the PC-MUTL software version

The mechanism for overwriting the flash ROM of the RU from the FTP server running on the CL differs depending on the PC-MUTL software version.

**◇ *REFERENCE* ◇**

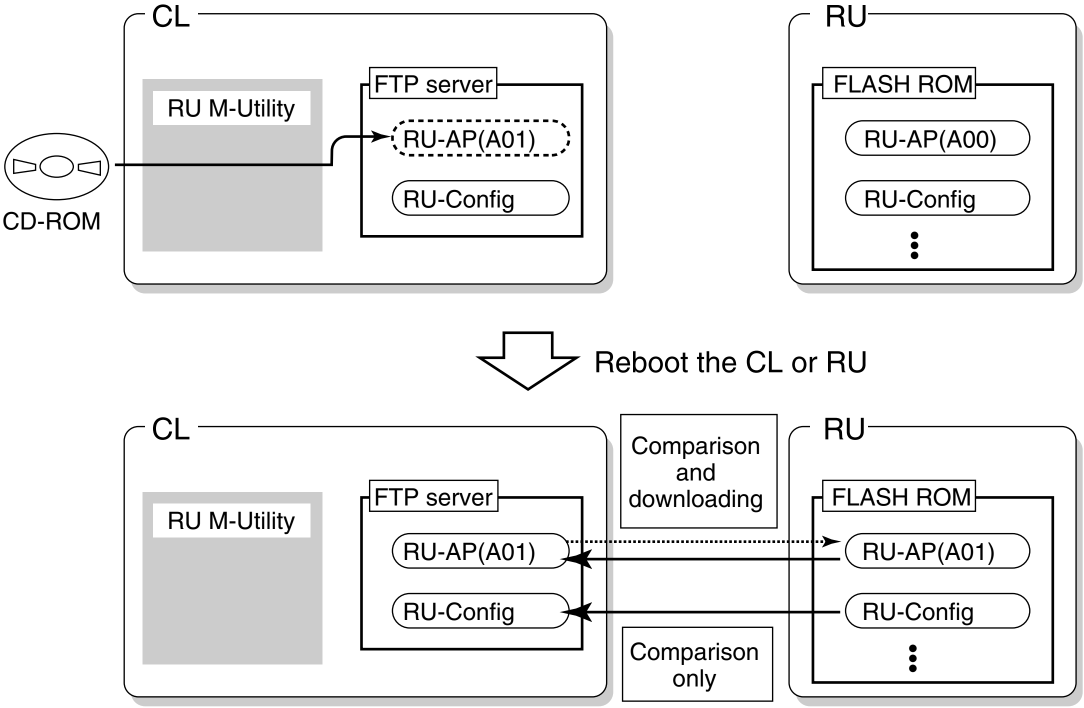
*To make the RU operative, not only the RU-AP and RU-Config must be contained in the flash ROM of the RU, but also the RU-AP and RU-Config of the identical contents must always reside in the flash ROM of the FTP server.*

## ● For PC-MUTL version 1.1 or earlier (RU software: A06 or earlier)

- After the PC-MUTL command is initially issued, the FTP server on the CL is overwritten.
- After the RU is reset, the auto update feature during the RU bootup process allows the flash ROM of the RU to be overwritten from the FTP server on the CL.

☞ “[2] PC-MUTL commands”

☞ “[3] Auto update feature”


CL
RU M-Utility
FTP server
RU-AP(A01)
RU-Config
CD-ROM
RU
FLASH ROM
RU-AP(A00)
RU-Config
Reboot the CL or RU
CL
RU M-Utility
FTP server
RU-AP(A01)
RU-Config
Comparison and downloading
Comparison only
RU
FLASH ROM
RU-AP(A01)
RU-Config

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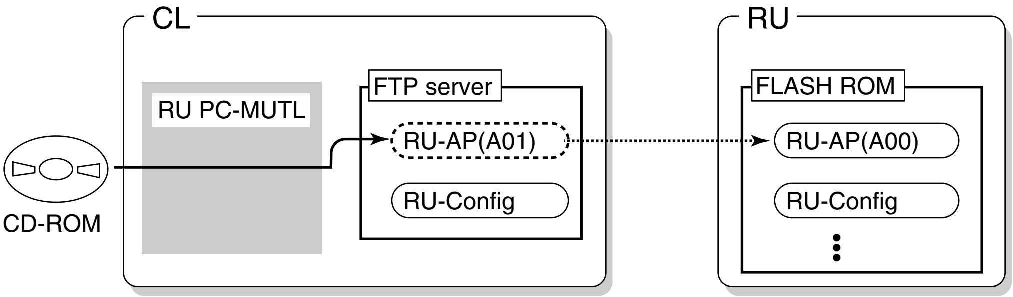
## ● For PC-MUTL version 1.2 or later (RU software: A07 or later)

- After the PC-MUTL command is initially issued, the FTP server on the CL is overwritten, and the flash ROM of the RU is then overwritten.
- Auto update feature ON/OFF can be set in “AUTO UPDATE” of the RU configuration.

☞ “[2] PC-MUTL commands”

☞ “[3] Auto update feature”


CL
RU PC-MUTL
FTP server
RU-AP(A01)
RU-Config
CD-ROM
RU
FLASH ROM
RU-AP(A00)
RU-Config

FR6H2010.EPS

## [2] PC-MUTL commands

● What PC-MUTL commands are used?

Four commands for overwriting the flash ROM from the FTP server on the CL by use of the CL-PC: INSTALL, PREVIOUS VERSION, EDIT CONFIGURATION, and VERSION UP

● Functions of the commands

- Command for writing the RU software only: VERSION UP
- Command for writing the RU configuration only: EDIT CONFIGURATION (and PREVIOUS VERSION)
- Command for writing both: INSTALL

◆ ***NOTE*** ◆

*When the version of RU-AP has been updated, the date of the RU-Config file may be changed in the following scenarios.*

- *When the date is changed: The contents of the RU-Config have been changed prior to the version update (including the RU-Config setup screen that appears during RU-AP installation).*
- *When the date is not changed: The contents of the RU-Config have not ever changed.*

◇ ***REFERENCE*** ◇

*Only for the SCN-related data, RESTORE of the PC-MUTL should be used to update them.*

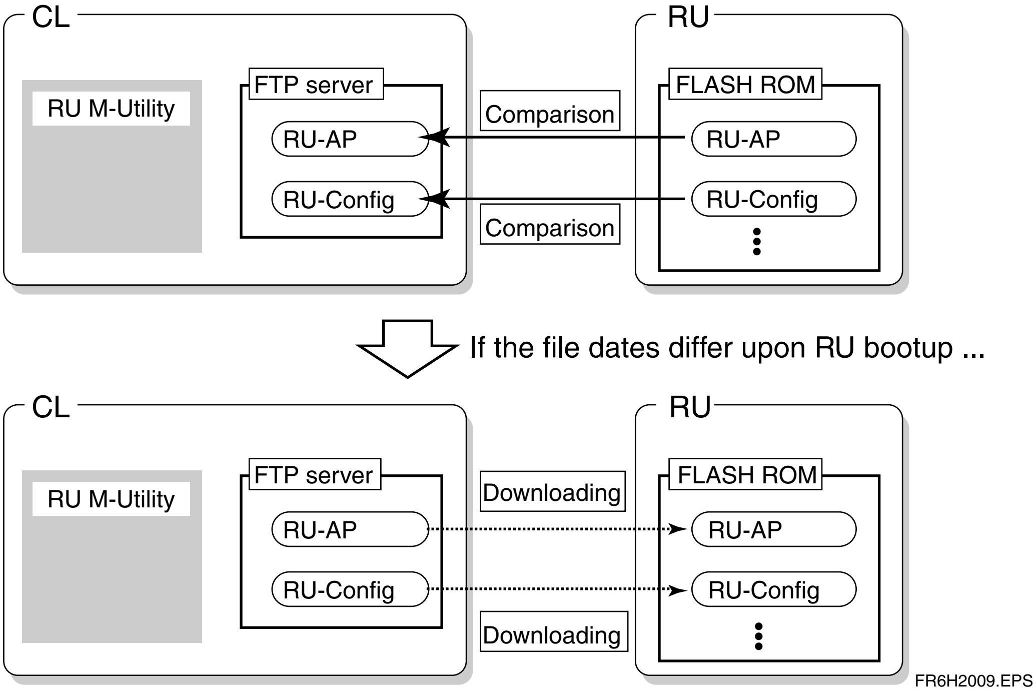
- *SCN ALL DATA*
- *SCN OPTICAL DATA*
- *SCN LIGHT COLLECTING DATA*

## [3] Auto update feature

The auto update feature is such that when the RU is booted, the dates of the RU-AP and RU-Config are compared between the FTP server on the CL and the flash ROM of the RU; and if they differ, the data is overwritten from the FTP server on the CL into the flash ROM of the RU.

**◆ *NOTE* ◆**

*Care should be exercised because, even when the FTP server contains files dated older than those in the flash ROM, the data in the flash ROM is updated.*


CL
RU M-Utility
FTP server
RU-AP
RU-Config
Comparison
Comparison
RU
FLASH ROM
RU-AP
RU-Config
If the file dates differ upon RU bootup ...
CL
RU M-Utility
FTP server
RU-AP
RU-Config
Downloading
Downloading
RU
FLASH ROM
RU-AP
RU-Config
FR6H2009.EPS

**◇ *REFERENCES* ◇**

- *In geographical regions where the PC’s time zone is set for automatically adjusting clock for daylight saving changes, the auto update feature is initiated upon daylight saving change.*
- *When the user boots up the RU, he may be surprised at the blinking LED and alarm sound, and consequently power it OFF while the flash ROM is being accessed.*
- *As the power is turned OFF while the flash ROM is being accessed, the contents of the flash ROM will be damaged, resulting in the failure of the RU to boot up.*

## 2.2 RU Error Handling

When an I/O (mechanism, scanner, etc.) abnormality occurs on the preceding models, the system used to shuts down handling then it as a fatal error.

The RU, however, performs a retry process except when it is inoperative.

### ● Retry operation

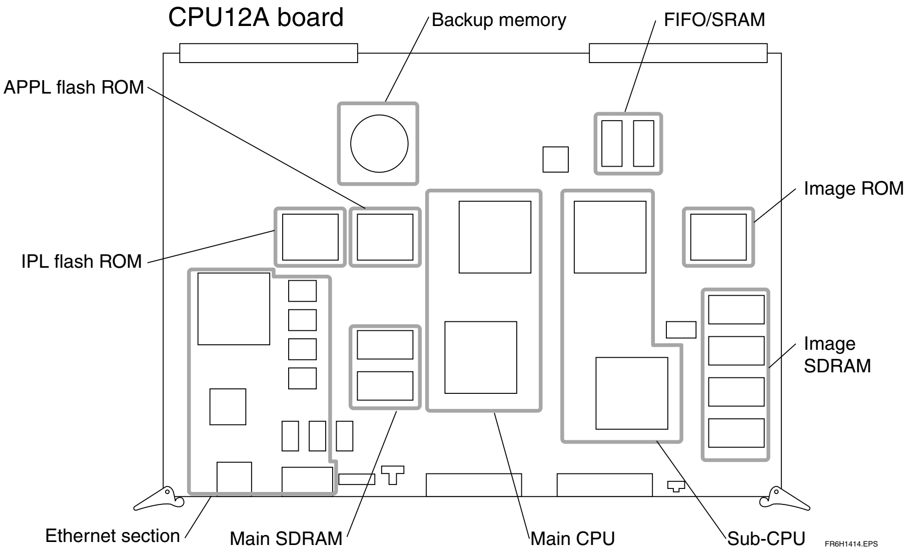
- If an I/O (mechanism, scanner, etc.) abnormality occurs between cassette insertion and IP read, the system returns the IP to the cassette.
- If a scanner unit I/O (mechanism, scanner, etc.) abnormality occurs at the beginning of an IP read, the system continues processing as needed to achieve cassette ejection.

### ● State where the system is inoperative

- When the CPU functions of the SCN12A board and CPU12A board become inoperative
- When power supply voltage output is stopped
- When the communication between the RU and the CL is stopped

## 2.2.1 CPU12A Board Functions

- Two CPUs are incorporated: main CPU (RU control) and sub-CPU (image control).
- This board consists of an IPL flash ROM, APPL flash ROM, backup memory, FIFO/SRAM, image ROM, image SDRAM, main SRAM, and Ethernet section.
- The sub-CPU (image control) controls an image, which is transmitted from the Ethernet section to the CL in several lines at a time.


CPU12A board
Backup memory
FIFO/SRAM
APPL flash ROM
Image ROM
IPL flash ROM
Image SDRAM
Ethernet section
Main SDRAM
Main CPU
Sub-CPU
FR6H1414.EPS

## 2.2.2 Diagnostics Sequence upon RU Bootup

There are two types of diagnostics processing upon RU bootup: “When booted by turning ON the power switch of the RU” and “When booted after the RU shutdown process”.

### ■ When Booted by Turning ON the Power Switch of the RU

(1) Load (a) and (b) from the flash ROM on the CPU12A board into the DRAM memory.

- (a) MAIN CPU IPL (OS)
- (b) MAIN CPU APPL

(2) Diagnose each of the following boards (a) through (d).

- (a) SNS12A board
- (b) DRV12A board
- (c) SCN12A board
- (d) Sub-CPU (image processing CPU) on the CPU12A board
- ➪ When the diagnostics on the sub-CPU are completed normally, the “Sub CPU LED” segments on the CPU12A board flash right and left.

**◇ *REFERENCES* ◇**

- *The diagnostics include checking for availability (provided or not provided) and canceling each of the internal reset conditions of the hardware.*
- *For the sub-CPU, its self diagnostics will be activated by canceling its internal reset condition.*

(3) Perform “barcode reader communication check” and “fuse check”.

(4) Perform mechanical control diagnostics (☞ “5.1 “Initialization Process Flow”).

(5) Verify communication with the CL.

- ➪ When it is completed normally, the date and time data is acquired from the CL.

**◇ *REFERENCES* ◇**

- *When the mechanical control diagnostic “5.1.6 IP Search” is completed normally, “step (6)” is initiated.*
- *Steps (4) and (5) proceed concurrently.*

(6) Perform scanner diagnostics (including communication checks for the CPU12A and SCN12A boards).

➩ When the scanner diagnostics are completed normally, the “Main CPU LED” segments on the CPU12A board flash right and left.

**◇ *REFERENCES* ◇**

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- *The date and time for any error code that has occurred until the date and time data was acquired from the CL is indicated as “0000.00.00.00.00:AA”.*
- *“AA” denotes a counter that counts time in seconds since power is turned ON.*

---

(7) The RU becomes ready.

➩ When it is completed normally, READY is notified to the CL.

## ■ When Booted after the RU Shutdown Process

**◆ *NOTE* ◆**

*When the power switch of the RU is turned OFF and then back ON, the diagnostic sequence in the case of “when booted by turning ON the power switch of the RU” is executed.*

(1) Check communication with the CL.

➩ When it is completed normally, the date and time data is acquired from the CL.

(2) Diagnose each of the boards.

(3) Perform “barcode reader communication check” and “fuse check”.

(4) Perform mechanical control diagnostics (☞ “5.1 “Initialization Process Flow”).

(5) Perform scanner diagnostics (including communication checks for the CPU12A and SCN12A boards).

➩ When the scanner diagnostics are completed normally, the “Main CPU LED” segments on the CPU12A board flash right and left.

(6) The RU becomes ready.

➩ When it is completed normally, READY is notified to the CL.

### 2.2.3 RU Shutdown Process

The RU shutdown process is such that the daily logs are saved into the FTP server, while the control section of the RU is in standby mode where its power remains ON to constantly monitor the status of the CL.

**◆ *NOTE* ◆**

*If the RU is powered OFF without performing the RU shutdown process, the logs will not be saved into the FTP server.*

(1) Receive the shutdown process from the CL.

(2) Save the logs into the FTP server.
The logs saved are as follows.

(a) ERROR LOG
(b) TRACE LOGS
(c) HISTORY LOG

(3) Load (a) and (b) from the flash ROM on the CPU12A board into the DRAM memory.

(a) MAIN CPU IPL (OS)
(b) MAIN CPU APPL

(4) Start constant monitoring of the CL status.

➪ It is checked to see that the CL has transitioned to the READY state, and the diagnostics sequence in the case of "■ when booted after the RU shutdown process" is initiated.

# 3. Descriptions of Electrical Operations

## 3.1 Power Supply Voltage Output Detection Function

To facilitate early recovery from a failure, the RU incorporates the power supply voltage output detection function, which offers the following features:

- Each load circuit incorporates a fuse that servers to isolate a fault.
- The isolation points are provided with a current detection circuit, which constantly monitors the power supply voltage output.
- The detection point can be identified by checking the combination of current detection circuits (points) in which an error has occurred.

● Fuses and detection points

| Power Supply | Board Name | Fuse No. | | Target for Protection | Detection Point |
|---|---|---|---|---|---|
| SLOT1 (+5V) | MTH12A | A11 | | CPU12A board | LED on CPU12A |
| | | A21 | | SCN12A board | A21P |
| | | A31 | | SNS12A board | LEDPON on LED12A |
| | | A41 | | MTH12A | None |
| | SCN12A | A21 | A22 | SZ1 (SED12A board) | A22P |
| | SNS12A | A31 | A32 | MZ1(FFM12A),INV12A | A32P |
| | | A31 | A33 | LED12A board | A33P |
| | | A31 | A34 | BCR (option) | A34P |
| | | A31 | A35 | Each sensor | A35P |
| SLOT2 (+24V) | MTH12A | B11 | | INV12A board (for LAMB1) | B11P |
| | | B21 | | INV12A board (for LAMB2) | B21P |
| | | C11 | | INV12A board (for LAMB3) | C11P |
| | | C21 | | INV12A/B board, FAN3/4, TSWB1, THB1S | C21P |
| | | C31 | | FAN1,FAN2 | C31P |
| SLOT3 (+24V) | DRV12A | D11 | | MA1 | D11P |
| | | D21 | | SolA1 | D21P |
| | | D31 | | SVA1,PA1 | D31P |
| | | D41 | | DRV12A board | D41P |
| | | D51 | | MB1 | D51P |
| | | E11 | | MC1 | E11P |
| | | E21 | | MC3 | E21P |
| | | E31 | | SolZ1 | E31P |
| | | E41 | | CLA1 | E41P |
| | | E51 | | MC2 | E51P |
| SLOT4 (+15V) | MTH12A | H11 | | SCN12 board | H11P |
| | SCN12A | H11 | H12 | SYN12A & PMT12A boards | H12P |
| | | H11 | H13 | LDD12A board | H13P |
| | | H11 | H14 | 5V system SYN12A board | H14P |
| SLOT4 (-15V) | MTH12A | J11 | | SCN12A board | J11P |
| | SCN12A | J11 | J12 | SYN12A, PMT12A & LDD12A boards | J12P |
| SLOT5 (+24V) | MTH12A | K11 | | POL | K11P |
| SLOT5 (+15V) | DRV12A | L11 | | MZ1(FFM12A)+15V | L11P |
| | | L11 | | MZ1(FFM12A)+5V | L12P |
| | | L31 | | MZ3 | L31P |

● Points detected with no fuses

| Power Supply | Position of Implementation | Target for Detection | Detection Method |
|---|---|---|---|
| SLOT2(+24V) | MTH12A | +24V for INV12A | BP |
| SLOT3(+24V) | DRV12A | +24V for DRV12A | DP |
| SLOT4(+15V) | MTH12A | +15V for SCN12A | HP |
| SLOT4(-15V) | MTH12A | -15V for SCN12A | JP |
| SLOT5(+24V) | MTH12A | +24V for POL | KP |
| SLOT5(+15V) | DRV12A | +15V for DRV12A | LP |

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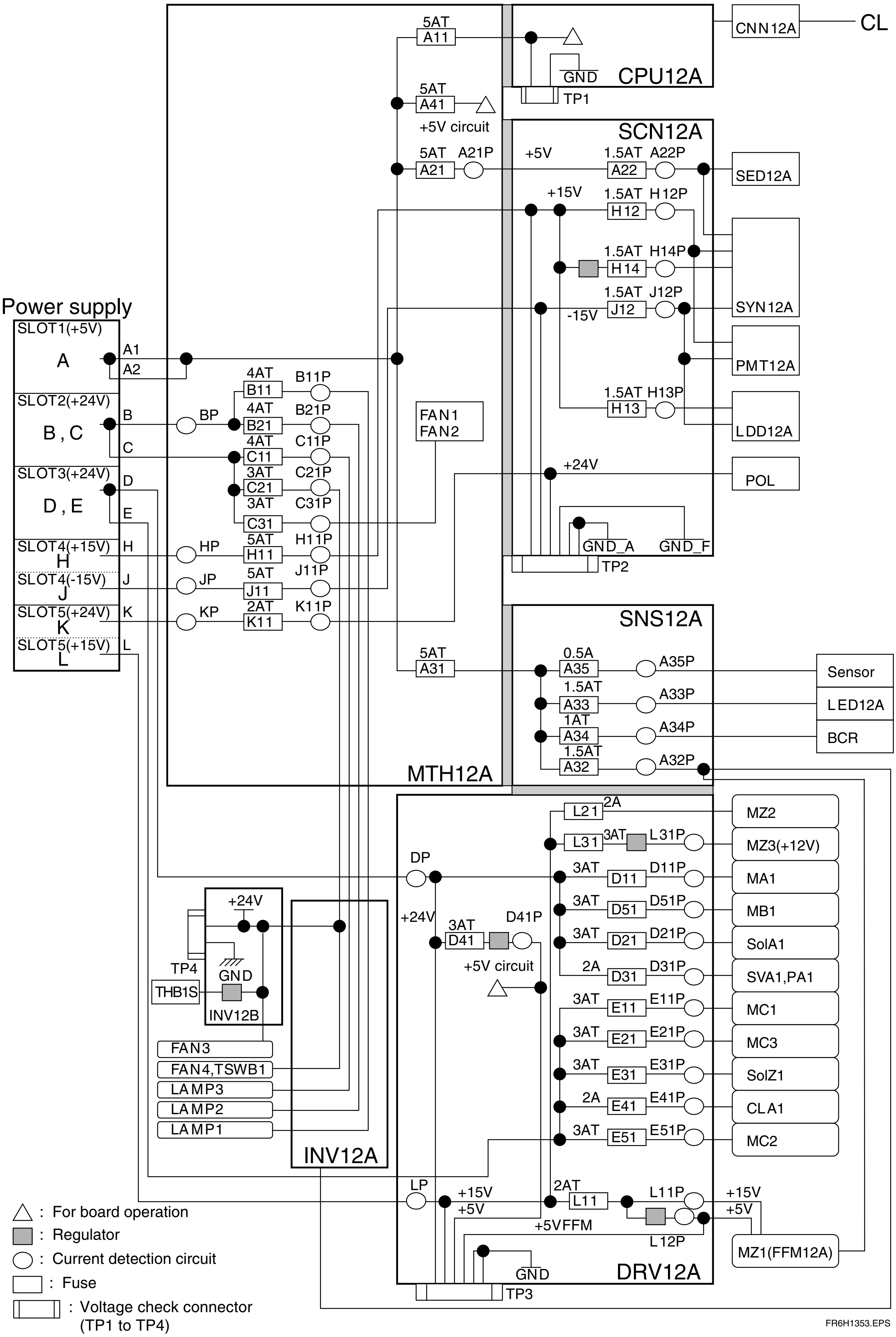
## ● CCR overcurrent protection circuit block diagram


CL
CNN12A
CPU12A
5AT A11
GND
TP1
5AT A41
+5V circuit
SCN12A
5AT A21P A21
+5V
1.5AT A22P A22
SED12A
+15V
1.5AT H12P H12
1.5AT H14P H14
SYN12A
1.5AT J12P J12
-15V
PMT12A
1.5AT H13P H13
LDD12A
+24V
POL
GND_A
GND_F
TP2
Power supply
SLOT1(+5V)
A
A1
A2
SLOT2(+24V)
B , C
B
C
BP
4AT B11 B11P
4AT B21 B21P
4AT C11 C11P
3AT C21 C21P
3AT C31 C31P
FAN1
FAN2
SLOT3(+24V)
D , E
D
E
SLOT4(+15V)
H
HP
5AT H11 H11P
SLOT4(-15V)
J
JP
5AT J11 J11P
SLOT5(+24V)
K
KP
2AT K11 K11P
SLOT5(+15V)
L
SNS12A
5AT A31
0.5A A35 A35P
1.5AT A33 A33P
1AT A34 A34P
1.5AT A32 A32P
Sensor
LED12A
BCR
MTH12A
L21 2A
L31 3AT L31P
DP
3AT D11 D11P
3AT D51 D51P
+24V
3AT D41 D41P
3AT D21 D21P
+5V circuit
2A D31 D31P
3AT E11 E11P
3AT E21 E21P
3AT E31 E31P
2A E41 E41P
3AT E51 E51P
MZ2
MZ3(+12V)
MA1
MB1
SolA1
SVA1,PA1
MC1
MC3
SolZ1
CLA1
MC2
+24V
TP4
GND
THB1S
INV12B
INV12A
FAN3
FAN4,TSWB1
LAMP3
LAMP2
LAMP1
LP
+15V
+5V
2AT L11 L11P
+15V
+5V
+5VFFM
L12P
MZ1(FFM12A)
GND
DRV12A
TP3
△ : For board operation
▨ : Regulator
○ : Current detection circuit
▭ : Fuse
▭ : Voltage check connector (TP1 to TP4)
FR6H1353.EPS

## ● 5 V power supply (slot 1): A

| Error Code | Detection Point | | | | | | Error Name |
|---|---|---|---|---|---|---|---|
| | A21 | A22 | A32 | A33 | A34 | A35 | |
| 12810 | 1 | 1 | 1 | 1 | 1 | 1 | Power supply A error |
| 12811 | 1 | 1 | 0 | 0 | 0 | 0 | Power supply A21 error |
| 12812 | 0 | 1 | 0 | 0 | 0 | 0 | Power supply A22 error |
| 12813 | 0 | 0 | 1 | 0 | 0 | 0 | Power supply A32 error |
| 12814 | 0 | 0 | 0 | 1 | 0 | 0 | Power supply A33 error |
| 12815 | 0 | 0 | 0 | 0 | 1 | 0 | Power supply A34 error |
| 12816 | 0 | 0 | 0 | 0 | 0 | 1 | Power supply A35 error |
| 12817 | 0 | 0 | 1 | 1 | 1 | 1 | Power supply A3 error |
| 12818 | 1 | 0 | — | — | — | — | Power supply A row abnormal detected |
| 12819 | * | | | | | | Power supply A system error |

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12810 to 12818.

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## ● 24 V power supply (slot 2): B and C

| Error Code | Detection Point | | | | | Error Name |
|---|---|---|---|---|---|---|
| | B | B11 | B21 | C11 | C21 | |
| 12820 | 1 | 1 | 1 | 1 | 1 | Power supply BC error |
| 12823 | 0 | 1 | 0 | 0 | 0 | Power supply B11 error |
| 12824 | 0 | 0 | 1 | 0 | 0 | Power supply B21 error |
| 12825 | 0 | 0 | 0 | 1 | 0 | Power supply C11 error |
| 12826 | 0 | 0 | 0 | 0 | 1 | Power supply C21 error |
| 12821 | 0 | 0 | 0 | 1 | 1 | Power supply C error |
| 12822 | 1 | 1 | 1 | 0 | 0 | Power supply B error |
| 12827 | 1 | 0 | — | — | — | Power supply B row abnormal detected |
| | 1 | — | 0 | — | — | Power supply B row abnormal detected |
| 12828 | * | | | | | Power supply BC system error |

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12820 to 12827 and any bit is 1.

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## ● 24 V power supply (slot 3): D and E

| Error Code | Detection Point | | | | | | | | | Error Name |
|---|---|---|---|---|---|---|---|---|---|---|
| | D | D11 | D21 | D31 | D41 | E11 | E21 | E31 | E41 | |
| 12830 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Power supply DE error |
| 12831 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | Power supply D error |
| 12832 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | Power supply E error |
| 12833 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Power supply D11 error |
| 12834 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Power supply D21 error |
| 12835 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | Power supply D31 error |
| 12836 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | Power supply D41 error |
| 12837 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | Power supply E11 error |
| 12838 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | Power supply E21 error |
| 12839 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | Power supply E31 error |
| 12840 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | Power supply E41 error |
| 12841 | 1 | 0 | — | — | — | — | — | — | — | Power supply D row abnormal detected |
| | 1 | — | 0 | — | — | — | — | — | — | Power supply D row abnormal detected |
| | 1 | — | — | 0 | — | — | — | — | — | Power supply D row abnormal detected |
| | 1 | — | — | — | 0 | — | — | — | — | Power supply D row abnormal detected |
| 12842 | * | | | | | | | | | Power supply DE system error |

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12830 to 12841 and any bit is 1.

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## ● 15 V power supply (slot 4): H

| Error Code | Detection Point | | | | | Error Name |
|---|---|---|---|---|---|---|
| | H | H11 | H12 | H13 | H14 | |
| 12850 | 1 | 1 | 1 | 1 | 1 | Power supply H error |
| 12851 | 0 | 1 | 1 | 1 | 1 | Power supply H11 error |
| 12852 | 0 | 0 | 1 | 0 | 0 | Power supply H12 error |
| 12853 | 0 | 0 | 0 | 1 | 0 | Power supply H13 error |
| 12854 | 0 | 0 | 0 | 0 | 1 | Power supply H14 error |
| 12855 | — | 1 | 0 | — | — | Power supply H row abnormal detected |
| | — | 1 | — | 0 | — | Power supply H row abnormal detected |
| | — | 1 | — | — | 0 | Power supply H row abnormal detected |
| | 1 | 0 | — | — | — | Power supply H row abnormal detected |
| 12856 | * | | | | | Power supply H system error |

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12850 to 12855.

TR6H1318.EPS

## ● -15 V power supply (slot 4): J

| Error Code | Detection Point | | | Error Name |
|---|---|---|---|---|
| | J | J11 | J12 | |
| 12860 | 1 | 1 | 1 | Power supply J error |
| 12861 | 0 | 1 | 1 | Power supply J11 error |
| 12862 | 0 | 0 | 1 | Power supply J12 error |
| 12863 | 1 | 0 | — | Power supply J row abnormal detected |
| | — | 1 | 0 | Power supply J row abnormal detected |
| 12864 | * | | | Power supply J system error |

<Bit indication>

1: Error
0: Normal

* When the error combination is other than from 12860 to 12863.

TR6H1319.EPS

## ● 24 V power supply (slot 5): K

| Error Code | Detection Point | | Error Name |
|---|---|---|---|
| | K | K11 | |
| 12870 | 1 | 1 | Power supply K error |
| 12871 | 0 | 1 | Power supply K11 error |
| 12872 | 1 | 0 | Power supply J row abnormal detected |

<Bit indication>

1: Error
0: Normal

TR6H1320.EPS

## ● 15 V power supply (slot 5): L

| Error Code | Detection Point | | | | | Error Name |
|---|---|---|---|---|---|---|
| | L | L11 | L12 | L21 | L31 | |
| 12880 | 1 | 1 | 1 | 1 | 1 | Power supply L error |
| 12881 | 0 | 1 | 1 | 0 | 0 | Power supply L11 error |
| 12882 | 0 | 0 | 1 | 0 | 0 | Power supply L12 error |
| 12883 | 0 | 0 | 0 | 1 | 1 | Power supply L21 error |
| 12884 | 0 | 0 | 0 | 0 | 1 | Power supply L31 error |
| 12885 | 1 | 0 | — | — | — | Power supply L row abnormal detected |
| | 1 | — | — | 0 | — | Power supply L row abnormal detected |
| | — | 1 | 0 | — | — | Power supply L row abnormal detected |
| | — | — | — | 1 | 0 | Power supply L row abnormal detected |
| | | | | | | Power supply L row abnormal detected |
| 12886 | * | | | | | Power supply L system error |

<Bit indication>

1: Error
0: Normal

* When the error combination is other than from 12880 to 12885.

TR6H1321.EPS

## 3.2 Erasure Unit

### ■ Overview

The erasure unit provides idle illumination control, IP erasure control, and fan control.

Feature: Erasure unit initialization is effected after verifying that the machine is emptied of IPs.

#### ● Idle illumination control

To obtain an adequate lamp light intensity for IP erasure after RU power ON, lamp (LAMP1-LAMP3) illumination and FAN3 operation are controlled so as to maintain a constant temperature inside the erasure unit.

#### ● IP erasure control

To effect IP erasure, the erasure unit pass time is controlled in accordance with the dose received by a processed IP.

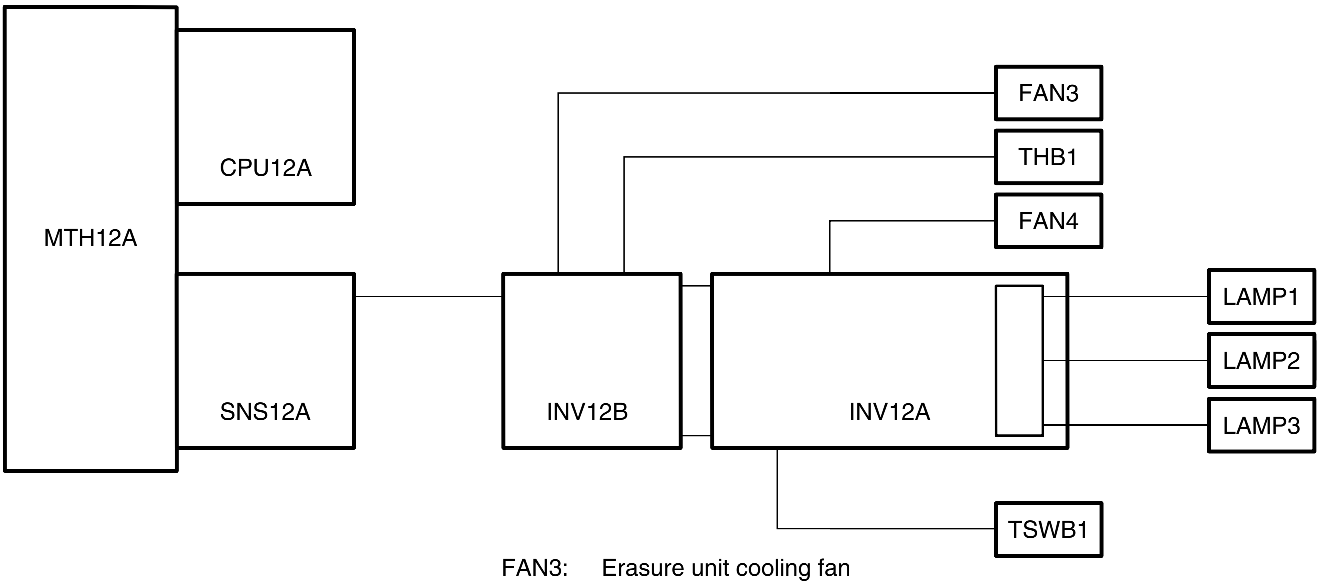
#### ● Fan control

Control is exercised so as to operate a fan when the internal temperature of the erasure unit is high.

#### ● Temperature adjustment control

- The heat generated during lamp (LAMP1-LAMP3) illumination is detected by the temperature thermistor (THB1) and used to exercise FAN3 operation and lamp illumination control.
- While the machine is idle and processing no IP, control is exercised to automatically illuminate the lamps for temperature adjustment purposes.
- Before the lamps are illuminated, they are subjected to preheating.

## ■ Components


MTH12A
CPU12A
SNS12A
INV12B
INV12A
FAN3
THB1
FAN4
LAMP1
LAMP2
LAMP3
TSWB1

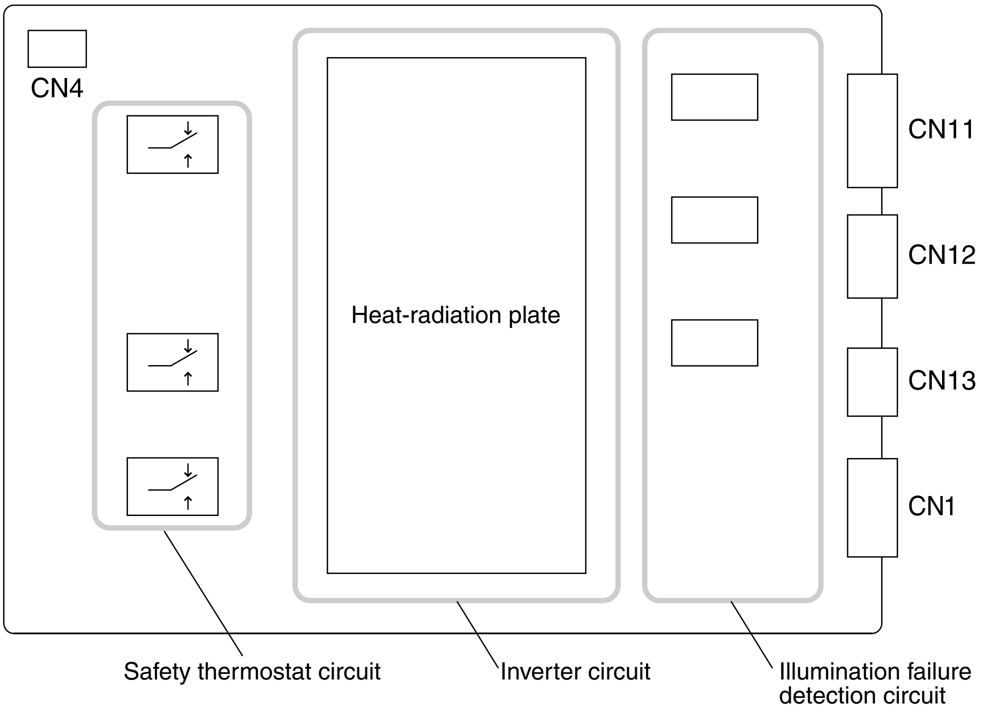
| | |
|---|---|
| FAN3: | Erasure unit cooling fan |
| FAN4: | Inverter cooling fan |
| TSWB1: | Thermal switch |
| THB1: | Temperature thermistor |

FR6H1356.EPS

## ■ Function descriptions

● INV12A board: This is a driver PC board, which consists of a safety thermostat circuit, inverter circuit, and illumination failure detection circuit.

INV12A board


CN4
Heat-radiation plate
CN11
CN12
CN13
CN1
Safety thermostat circuit
Inverter circuit
Illumination failure detection circuit

Safety thermostat circuit:
Upon receipt of the OFF signal from the safety thermostat (TSWB1), this circuit operates a relay to directly shut off the 24 V supply.

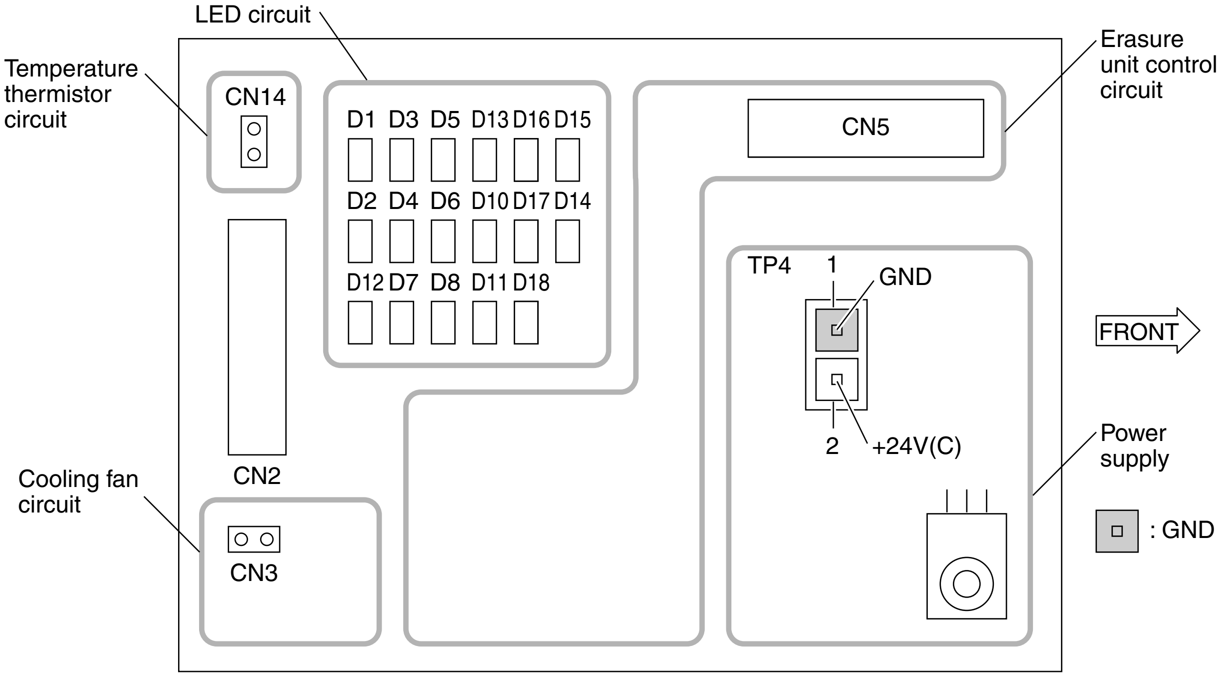
Illumination failure detection circuit:
Each lamp is furnished with a detection circuit, which achieves illumination failure detection in accordance with the current.

Inverter circuit:
Each lamp is provided with a lamp voltage output circuit.

FR6H1355.EPS

- **INV12B board:** This is a control PC board, which consists of a temperature thermistor circuit, LED circuit, erasure unit control circuit, power supply, and cooling fan circuit.

INV12B board


LED circuit
Temperature thermistor circuit
CN14
D1 D3 D5 D13 D16 D15
D2 D4 D6 D10 D17 D14
D12 D7 D8 D11 D18
CN5
Erasure unit control circuit
TP4
1
GND
FRONT
2
+24V(C)
Power supply
CN2
Cooling fan circuit
CN3
: GND

| Test Pin TP4 | Voltage | Reference Voltage |
|---|---|---|
| TP4 1-2 | +24V | Should be between +23.5 and 25.0. |

- Temperature thermistor circuit: Processes temperature thermistor (THB1) signals.
- LED circuit: Displays the states of various signals fed from the erasure unit.
- Erasure unit control circuit: Communicates with the SNS12A board and controls the erasure unit.
- Power supply: Functions as a 24 V/24 V-to-5 V regulator circuit.
- Cooling fan circuit: Processes fan operation signals.

FR6H1354.EPS

## ■ Erasure unit internal status

The erasure unit's internal status is monitored and determined in accordance with various signal combinations.

| Board LED | | | | Status in the Erasure Unit |
|---|---|---|---|---|
| TH | HERR | FA | LT | |
| 0 | 0 | 0 | 1 | Thermistor failure |
| 1 | 0 | 0 | 1 | Excessively high temperature |
| 1 | 1 | 0 | 1 | Fan operation |
| 1 | 1 | 1 | 1 | Ready for use |
| 1 | 1 | 1 | 0 | Request for idle illumination ON |
| 0 | 1 | 1 | 0 | Thermistor failure |

LED indication 1 - ON, 0 - OFF

TR6H1323.EPS

| LED | Silk Indication | Meaning | LED Status | |
|---|---|---|---|---|
| | | | OFF | ON |
| D1 | 1PRE | Pre-heating signal issued to LAMP1. | GOOD | NG |
| D2 | 1ON | ON signal issued to LAMP1. | GOOD | NG |
| D12 | 1O | LAMP 1 is ON. | GOOD | NG |
| D3 | 2PRE | Pre-heating signal issued to LAMP2. | GOOD | NG |
| D4 | 2ON | ON signal issued to LAMP2. | GOOD | NG |
| D7 | 2O | LAMP 2 is ON. | GOOD | NG |
| D5 | 3PRE | Pre-heating signal issued to LAMP3. | GOOD | NG |
| D6 | 3ON | ON signal issued to LAMP3. | GOOD | NG |
| D8 | 3O | LAMP 3 is ON. | GOOD | NG |
| D10 | FAN | ON signal notified from the INV12A board to the SNS12A board. | OFF | ON |
| D11 | HERR | The INV12B board detected high temperature. | Detected | Not detected |
| D13 | LT | The INV12B board detected low temperature. | Detected | Not detected |
| D16 | FUS1 | LAMP1 fuse on the INV12A board is blown. | NG | GOOD |
| D17 | FUS2 | LAMP2 fuse on the INV12A board is blown. | NG | GOOD |
| D18 | FUS3 | LAMP3 fuse on the INV12A board is blown. | NG | GOOD |
| D15 | TH | Temperature thermistor (THB1) broken. | NG | GOOD |
| D14 | VCC | 5V output on the INV12A board. | GOOD | NG |

TR6H1322.EPS

## 3.3 LEDs on the SNS12A Board

By checking the illumination state of the LEDs on the SNS12A board, the status of each sensor can be verified.

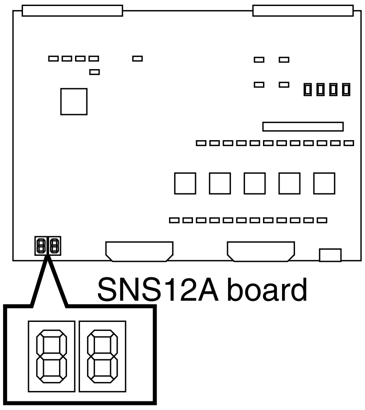
### 3.3.1 Meaning of LED ON (Illuminated)

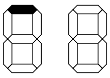
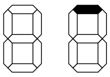
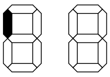
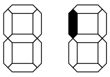
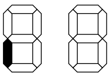
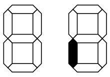
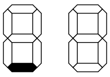
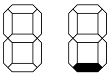
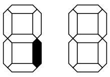
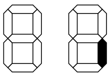
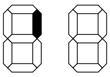
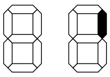
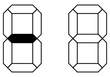
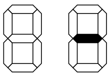
The LEDs signify the status of the signal transmitted from the sensor to the board.

An LED segment ON (illuminated) means that its corresponding sensor is CLOSE.

### 3.3.2 Correspondence between LEDs and Sensors

The 7-segment LEDs on the SNS12A board correspond to each of the following sensors as listed in the table below.



| LED position | I/O No. | Sensor name | LED position | I/O No. | Sensor name |
|---|---|---|---|---|---|
|  | SA1 | Cassette ejection sensor |  | SC4 | IP sensor |
|  | SA2 | Cassette IN sensor |  | SC3 | IP sensor |
|  | SA3 | Hold sensor |  | SC2 | Grip HP sensor |
|  | SA4 | Suction cup HP sensor |  | SC1 | Side-positioning HP sensor |
|  | SA5 | Suction sensor |  | SZ3 | Driven-side grip operation sensor |
|  | SB1 | IP sensor |  | SZ2 | Driving-side grip operation sensor |
|  | SZ4 | IP stopper HP sensor |  | SZ5 | Dust removal HP sensor |

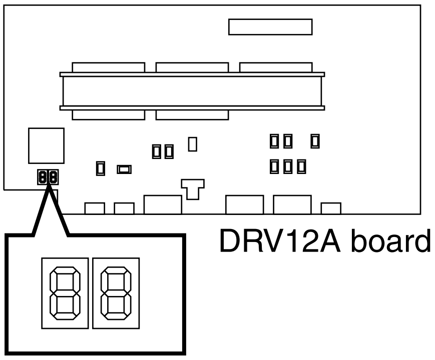
TR6H2023.EPS

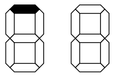
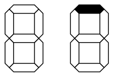
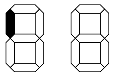
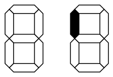
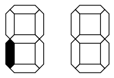
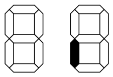
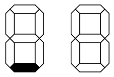
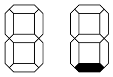
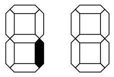
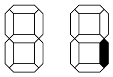
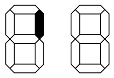
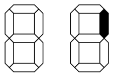
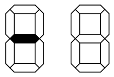
## 3.4 LEDs on the DRV12A Board

By checking the illumination state of the LEDs on the DRV12A board, the operating status of the solenoid and motor can be verified.

### 3.4.1 Correspondence between LEDs and Loads

The 7-segment LEDs on the DRV12A board correspond to each of the following loads as listed in the table below.



| LED position | I/O No. | Load name | LED position | I/O No. | Load name |
|---|---|---|---|---|---|
|  | SOLA1 | Cassette hold solenoid |  | MC3 | Transport motor |
|  | PA1 | Suction pump |  | MC2 | Grip motor |
|  | MA1 | Suction cup drive motor |  | MC1 | Side-positioning motor |
|  | SVA1 | Leak valve |  | MZ2 | Grip release motor |
|  | SOLZ1 | IP stopper solenoid |  | FFM | FFM motor |
|  | MB1 | Transport motor |  | CLA1 | Cassette extrusion clutch |
|  | MZ3 | Dust removal motor | | | |

TR6H2025.EPS

## 3.4.2 Meaning of LED ON (Illuminated)

An LED segment ON (illuminated) means that its corresponding load is being driven.

Note, however, that the signal for detecting whether it is being driven differs depending on each load.

Signals marked by a circle are detected.

| Load name | Control signal in the board | Drive signal to the load |
|---|---|---|
| SOLA1 | ❍ | |
| PA1 | | ❍ |
| MA1 | ❍ | |
| SVA1 | | ❍ |
| SOLZ1 | ❍ | |
| MB1 | ❍ | |
| MZ3 | | ❍ |
| MC3 | ❍ | |
| MC2 | ❍ | |
| MC1 | ❍ | |
| MZ2 | | ❍ |
| FFM | ❍ | |
| CLA1 | | ❍ |

# 4. Descriptions of Components and Their Operations

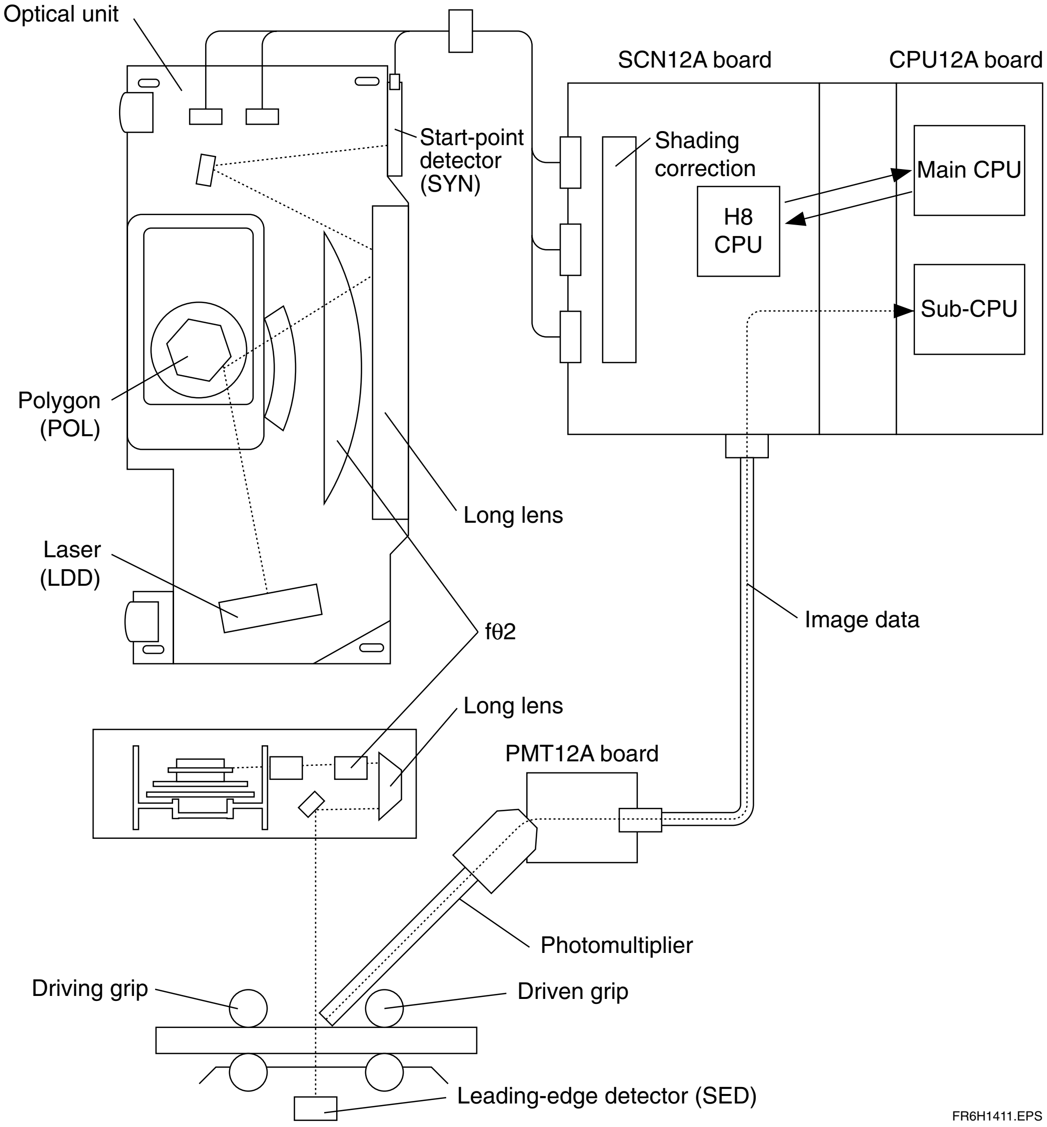
## 4.1 Descriptions of Scanner Unit and Its Operations

**CAUTIONS**

- *When servicing a PC board, be sure to wear a wrist band to ground your body. If you do not ground your body, the buildup of static electricity on your body may damage electronic components on the PC board.*
- *Do not uncover the optical unit.*
- *Never remove screws painted red.*
- *When returning a replaced optical unit for repairs, be sure to use the same packing materials that were used for initial shipment. Otherwise, the returned unit cannot be repaired.*

### 4.1.1 Scanner Unit

**■ Components**


Optical unit
SCN12A board
CPU12A board
Start-point detector (SYN)
Shading correction
H8 CPU
Main CPU
Sub-CPU
Polygon (POL)
Long lens
Laser (LDD)
fθ2
Image data
Long lens
PMT12A board
Photomultiplier
Driving grip
Driven grip
Leading-edge detector (SED)
FR6H1411.EPS

## 4.1.2 Descriptions of Scanner Operations

### ■ I/O components

● Optical unit

This unit consists of the laser (LDD: 50 mW), polygon (POL), start-point detector (SYN), f θ lens, and long lens.

● Sub-scanner unit

This unit consists of the driven grip, driving grip, photomultiplier (PMT), and leading-edge detector (SED).

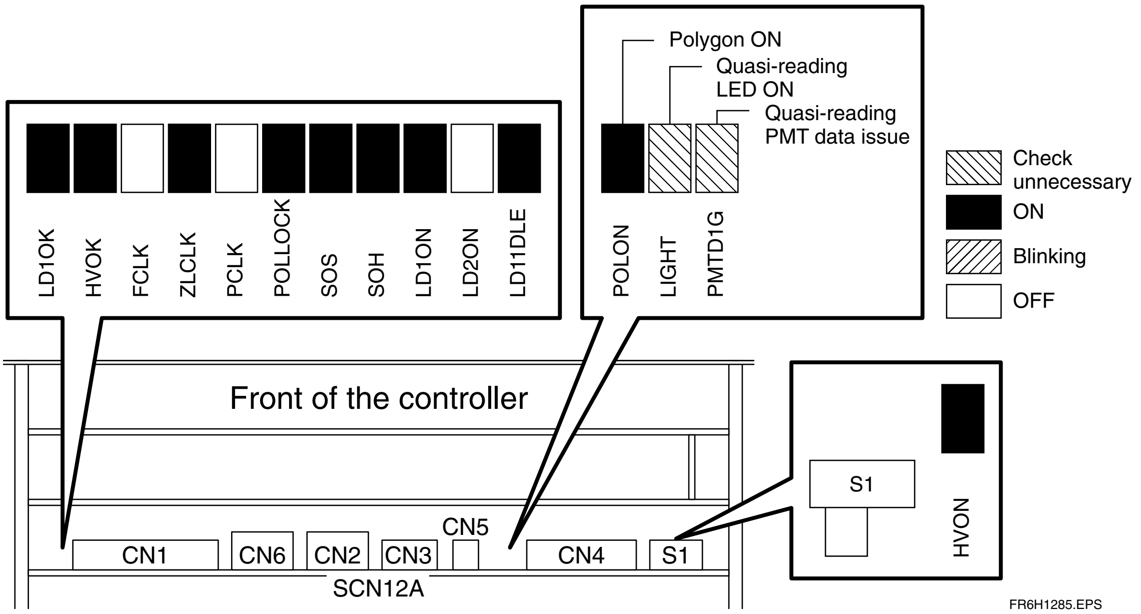
### ■ Descriptions of operations

The H8 CPU on the SCN12A board controls the optical unit and photomultiplier and communicates with the main CPU on the CPU12A board.

● Features

- The control signal status of each I/O is indicated by the LEDs on the SCN12A board.
- The scanner error code is formulated by combining an I/O control signal and PC board reference signal.

  It is structured so as to facilitate problem cause identification.
- The polygon data, shading correction data, sensitivity data, and format data are stored in the backup memory on the CPU12A board. They are fed to the SCN12A board for use in operations.


LD1OK
HVOK
FCLK
ZLCLK
PCLK
POLLOCK
SOS
SOH
LD1ON
LD2ON
LD11DLE
Polygon ON
Quasi-reading LED ON
Quasi-reading PMT data issue
POLON
LIGHT
PMTD1G
Check unnecessary
ON
Blinking
OFF
Front of the controller
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
S1
HVON

FR6H1285.EPS

## ● Meanings of SCN12A board LEDs

| LED | Meaning | LED ON/Blinking | LED OFF |
|---|---|---|---|
| LD1 OK | OK signal (laser power 50% or more) from the laser (LDD) | GOOD | NG |
| HV OK | High-voltage power supply OK signal from the photomultiplier (PMT) | GOOD | NG |
| FCLK,PCLCK | Reference signal issued by the SCN12A board | - | - |
| ZLCLK | H8 CPU operation status signal | GOOD (blinking) | NG |
| POL LOCK | OK signal from the polygon (POL) | GOOD | NG |
| SOS | Detection signal from the start-point detector (SYN) | Detected | Not detected |
| SOH | Detection signal from the leading-edge detector (SED) | Detected | Not detected |
| LD1 ON | ON signal from the SCN12A board to the laser (LDD) | ON | OFF |
| LD2 ON | Not used | - | - |
| LD1 IDLE | Control signal from the SCN12A board to the laser (LDD)<br>ON: Output generation is in progress.<br>OFF: No output is being generated. | ON | OFF |
| POL ON | ON signal from the SCN12A board to the polygon (POL) | ON | OFF |
| LIGHT | Quasi-data output signal with the PMT12A board LED illuminated | ON | OFF |
| PMT D1G | Quasi-data output signal generated by the LOG amplifier on the PMT12A board | ON | OFF |
| HV ON | High-voltage switch status signal<br>ON: The ON setting is selected by both the software and the hardware.<br>OFF: The OFF setting is selected by either the software or the hardware. | ON | OFF |

TR6H1101.EPS

## 4.1.3 RU Image Data Flow

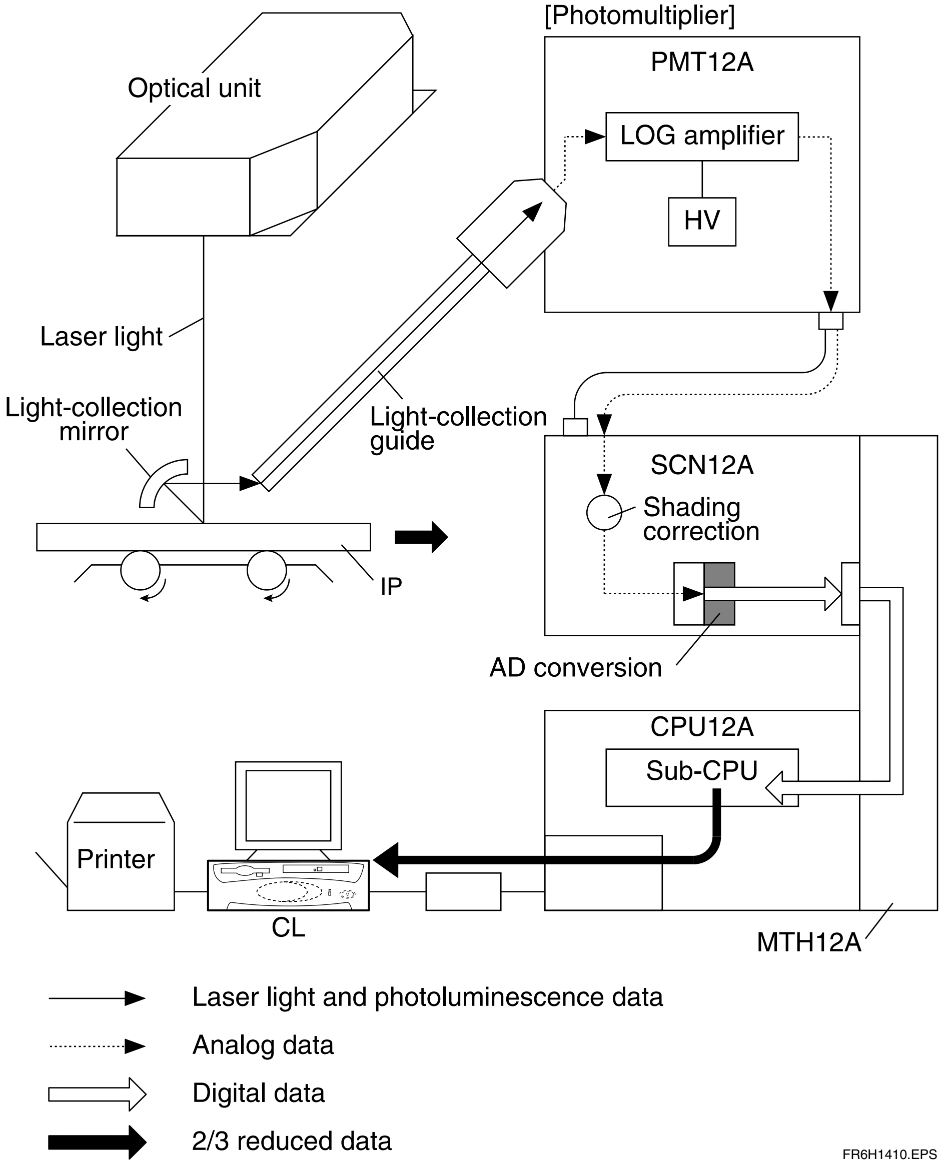
(1) Photoluminescence data is generated when the laser light emitted from the optical unit falls on an IP. It is read by the photomultiplier via the light-collection guide.

(2) The PMT12A board (photomultiplier) sends the data, in analog form, to the SCN12A board.

(3) The analog data thus sent is subjected to shading correction and other processes on the SCN12A board, and then converted to its digital data equivalent (A/D conversion).

(4) The SCN12A board sends the data, in digital data form, to the CPU12A board via the MTH12A board.

(5) The sub-CPU on the CPU12A board subjects the data to 2/3 line reduction and then transmits it to the CL via the network.

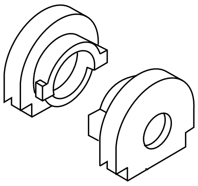

[Photomultiplier]
PMT12A
Optical unit
LOG amplifier
HV
Laser light
Light-collection mirror
Light-collection guide
SCN12A
Shading correction
IP
AD conversion
CPU12A
Sub-CPU
Printer
CL
MTH12A
Laser light and photoluminescence data
Analog data
Digital data
2/3 reduced data
FR6H1410.EPS

# 4.2 Descriptions of Mechanical Components and Their Operations

## ■ RU common parts

### ● E-ringless housings

The employed housings can be secured to side plates without E-rings.



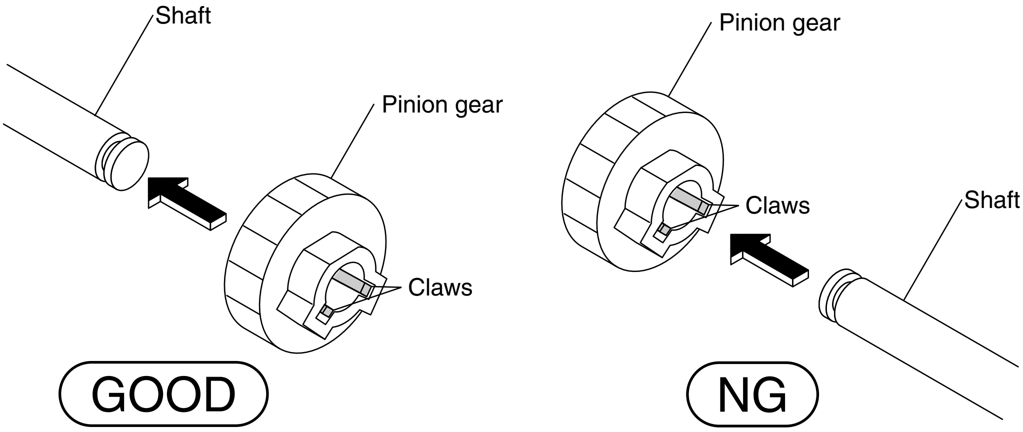
FR6H1281.EPS

### ● Snap-fit pinion gears

The employed pinion gears can be installed and removed without using retaining members or tools.

**CAUTION**

*When installing the pinion gear over the shaft, ensure that it is properly oriented. If you install it over the shaft while it is reversed, its claws may become damaged.*



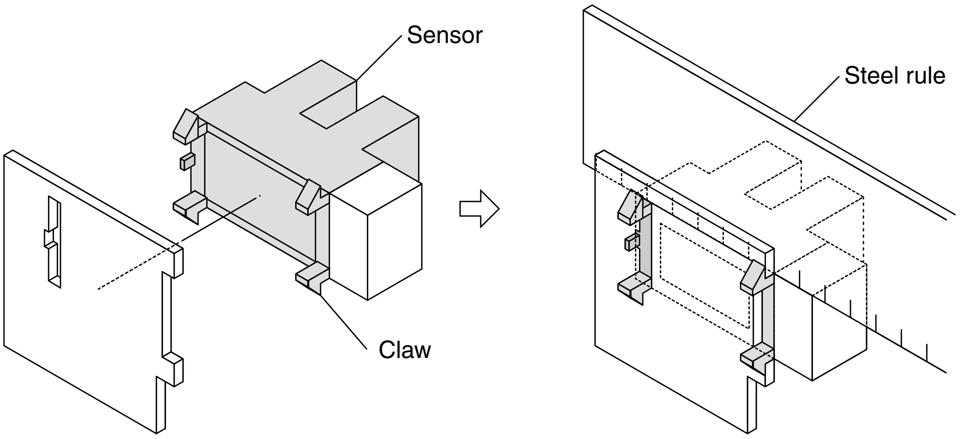
FR6H1282.EPS

- Photosensors

In marked contrast to the previously used screw-on type, the currently employed photosensors are to be claw-locked (for displacement prevention).

**CAUTION**

*When removing or installing the photosensor, use a steel rule or the like and exercise care not to damage the sensor claws.*



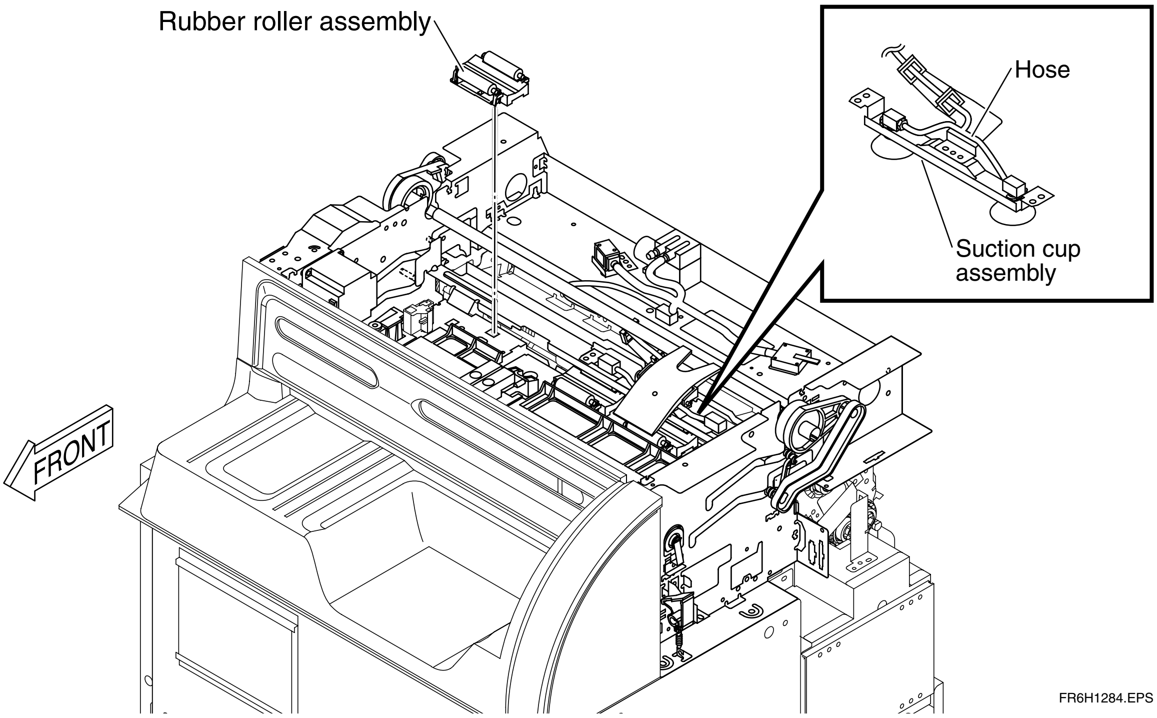
FR6H1283.EPS

## 4.2.1 Cassette Set Unit

The IP inserted into the cassette is suctioned by the suction cups and transported to the feed roller in the erasure conveyor unit.

The features of the RU cassette setting unit are summarized below:

- The suction cups have enhanced durability and need no replacement.
- The hose interconnecting the suction cups and suction pump is constructed of one piece without joints. It differs from the previous type, which uses a branch pipe.
- Switching between the inch and metric settings can be performed by repositioning the guides and changing the associated CPU board DIP switch settings.
- A rubber roller assembly is used to prevent the IP image read surface from being damaged.



## ■ Suction cup home position

The suction cup home position sensor (SA4) detects the suction cup home position. When the suction cup assembly is in the home position, the spur gear claw closes the suction cup home position sensor (SA4) by blocking its light path.

⇩

## ■ IP feed suction

The suction cup drive motor (MA1) rotates to move the suction arm toward the cassette cover. The moment the suction cup assembly reaches the IP suction position, the suction pump (PA1) operates to suction the IP. If the suction sensor (SA5) does not close within a period of 1 second in this instance, a suction failure occurs.

⇩

## ■ IP feed leak

After the suction cup assembly is moved to the feed roller in the erasure conveyor unit, the leak valve (SVA1) operates to separate the suctioned IP from the suction cup assembly.

To verify the subsequent IP feed operation, the cassette inlet IP detection sensor (SB1) detects the IP leading edge.

## ■ IP load suction

When the IP is loaded from the erasure conveyor unit into the cassette, the suction pump (PA1) operates to suction the IP trailing edge.

In this instance, the suction cup assembly is in the home position.

⇩

## ■ IP load leak

The suction cup drive motor (MA1) rotates to move the suction arm toward the cassette cover, thereby loading the IP into the cassette. Once the IP loading is completed, the leak valve (SVA1) operates to release the suction of the suction cup.

⇩

## ■ Cassette ejection

After the IP suction is released, the solenoid (SOLA1) operates to release the cassette hold pin that secures the cassette in place.

At this time, the extrusion clutch (CLA1) operates so that the driving force of the IP removal arm is transmitted to the rubber roller. Thus, the moment the IP removal arm is moved to its home position, the rubber roller rotates, so that the cassette is ejected.

Once the cassette ejection is completed, the extrusion clutch (CLA1) turns off, and the processing status lamp goes off, while the cassette removal lamp lights up.

## 4.2.2 Erasure Conveyor Unit

The IP transported from the cassette setting unit to the feed roller is forwarded to the side-positioning conveyor. In this instance, the barcode is read and the brush roller removes dust from the IP surface.

Further, the read image is erased from the IP and the IP is transported to the cassette setting unit.

The features of the RU erasure conveyor unit are summarized below:

- Cleaning rollers are incorporated in the erasure conveyor unit to remove dust from IPs.
- The erasure conveyor unit has a barcode reader.
- Two functions are selectable for IP image erasure: primary erasure (IP image erasure after the completion of an image read operation) and secondary erasure (residual image/RI spot erasure from IPs left unused for prolonged periods of time).

### ■ IP feed conveyance (IP length measurement and barcode reading)

While the IP transported from the cassette setting unit to the feed roller is forwarded to the side-positioning conveyor by the conveyance motor (MB1), it is detected by the cassette inlet IP detection sensor (SB1). The length of the transported IP is then measured (by counting the time required for the IP to pass through the SB1 sensor) to determine the IP size. Further, the barcode reader operates to read the barcode information the moment the IP length measurement sequence starts.

### ■ IP load conveyance (image erasure)

After the completion of an image read process, the IP is transported by the conveyance motor (MB1) to let the erasure lamps delete image data.

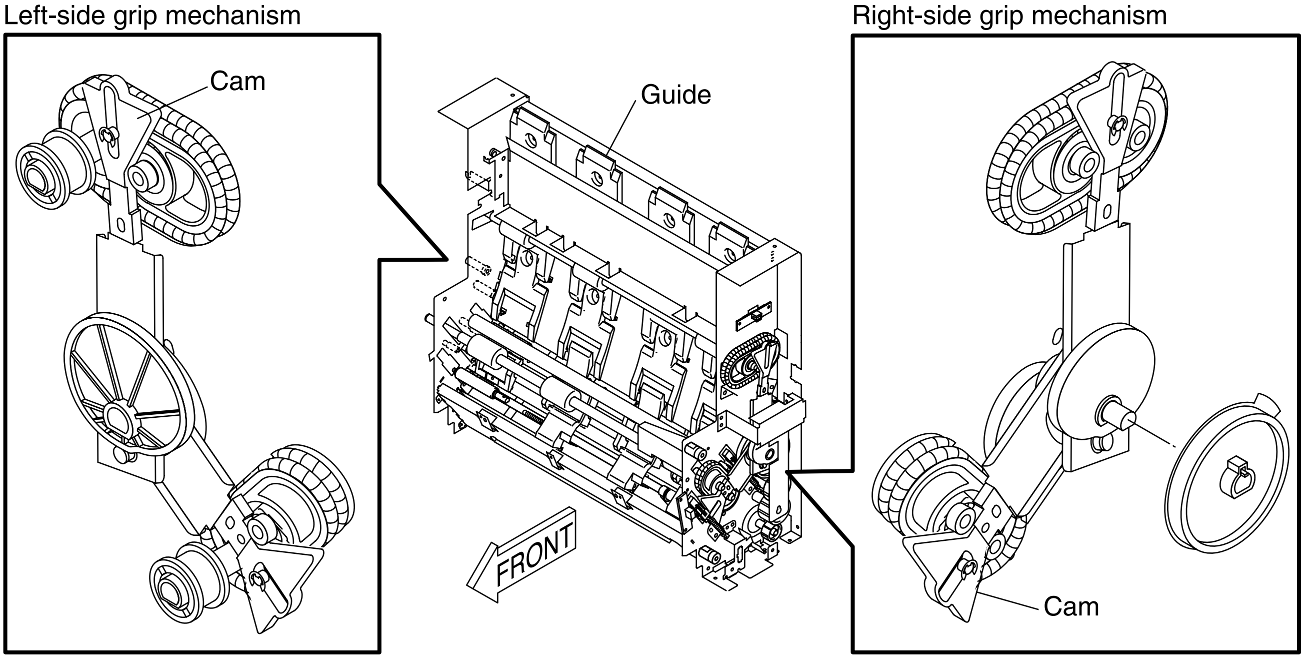
### 4.2.3 Side-positioning Conveyor

The IP transported from the erasure conveyor unit to the side-positioning conveyor is side-positioned and forwarded to the sub-scanner unit. Note that a side-positioning operation is performed two times.

The features of the RU side-positioning conveyor are summarized below:

- On the preceding model, the side-positioning conveyor incorporates an IP stopper mechanism and side-positioning claw assembly to correct any IP skew and side-position the transported IP. Within the RU, however, the IP stopper mechanism

  (IP skew correction function) and side-positioning claw assembly (IP side-positioning function) are separately incorporated in the sub-scanner unit and side-positioning conveyor.
- The preceding model uses a wire for grip roller release. However, the RU uses a plastic cam instead.
- The preceding model furnishes the IP conveyance path with a shock absorber. However, the RU uses plastic guides.

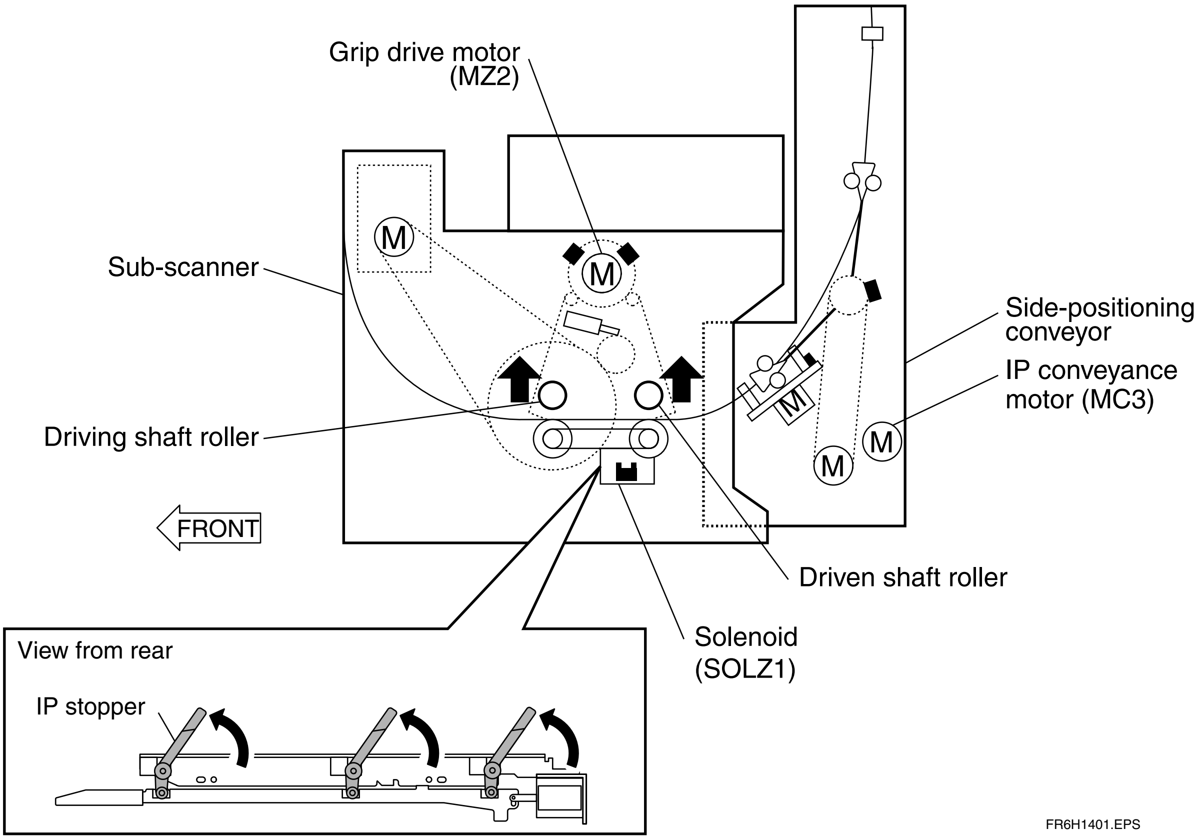


FR6H1400.EPS

## ■ IP feed conveyance

The IP conveyance motor (MC3) operates to transport the IP to the IP stopper section in the sub-scanner unit. In this instance, the solenoid (SOLZ1) operates to raise the IP stoppers.

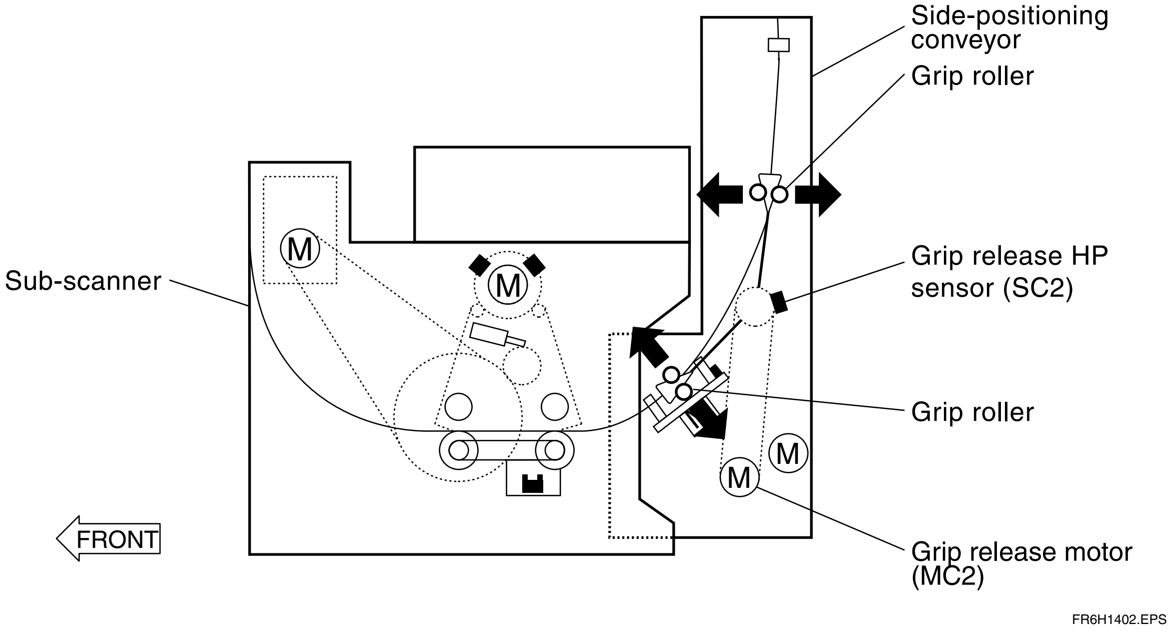
Further, the driven and driving shaft roller grips in the sub-scanner unit are released.


Grip drive motor (MZ2)
Sub-scanner
Side-positioning conveyor
IP conveyance motor (MC3)
Driving shaft roller
FRONT
Driven shaft roller
Solenoid (SOLZ1)
View from rear
IP stopper
M

FR6H1401.EPS

## ■ Grip roller release

When the transported IP is detected by the grip release home position sensor (SC2), the grip release motor (MC2) operates to release the grip roller.

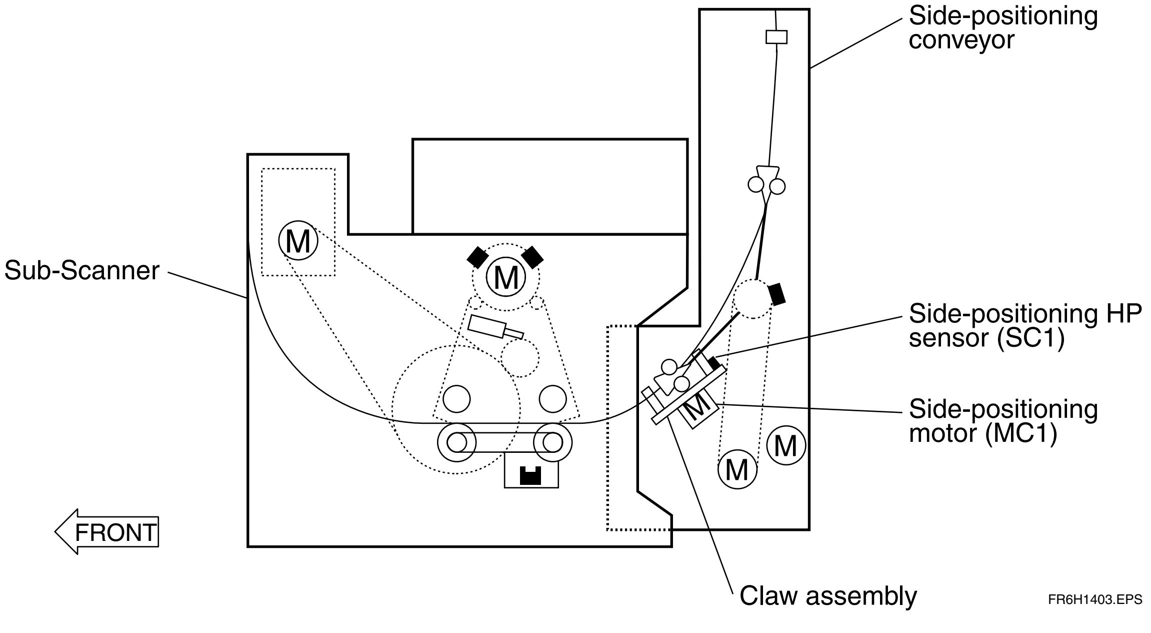

Side-positioning conveyor
Grip roller
Grip release HP sensor (SC2)
Grip roller
Grip release motor (MC2)
Sub-scanner
FRONT
M
M
M
M
FR6H1402.EPS

## ■ Side-positioning operation

When the side-positioning sensor (SC1) detects that the claw assembly is in its home position, the side-positioning motor (MC1) drives to perform side-positioning operation twice.

The side-positioning operation causes the edge of the IP to align closely to the side guide of the side-positioning conveyor, thereby determining the orientation and position of the IP.

After the side-positioning operation is completed, the claw assembly moves to its home position and the IP is conveyed to the scanner unit.

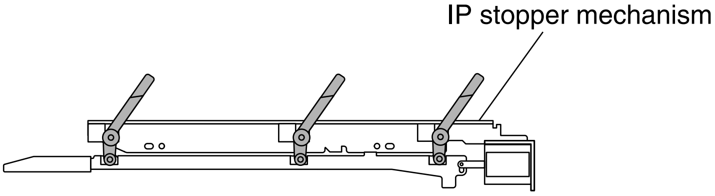

Side-positioning conveyor
Sub-Scanner
Side-positioning HP sensor (SC1)
Side-positioning motor (MC1)
FRONT
Claw assembly
M
M
M
M
M
FR6H1403.EPS

## 4.2.4 Subscanning Unit

When the IP is transported from the side-positioning conveyor, the subscanning unit reads the image recorded on the IP. The subscanning unit also transmits image data to the CL as soon as the image read process starts.

The features of the RU subscanning unit are summarized below:

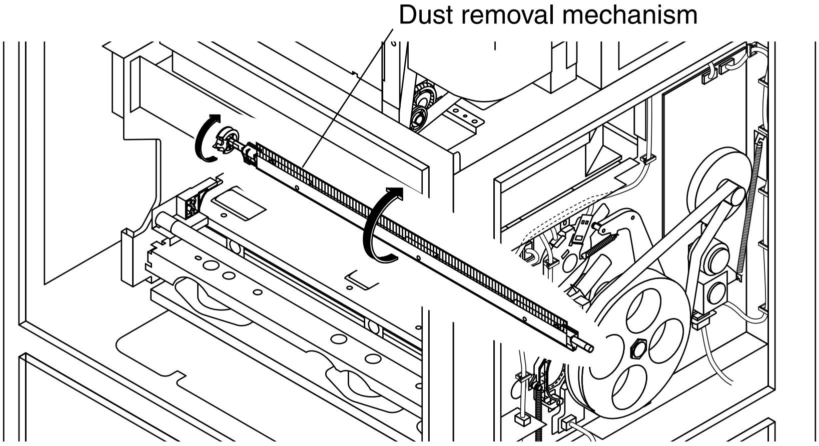
- The IP stopper mechanism for side-positioning is mounted in front of the light-collection mirror assembly.



FR6H1404.EPS

- The dust removal mechanism is incorporated.

  Dust removal is performed after RU power ON (during initialization) to clean the incidence surface of the light-collection guide. It can also be initiated at any time by issuing a command in the user utility mode.



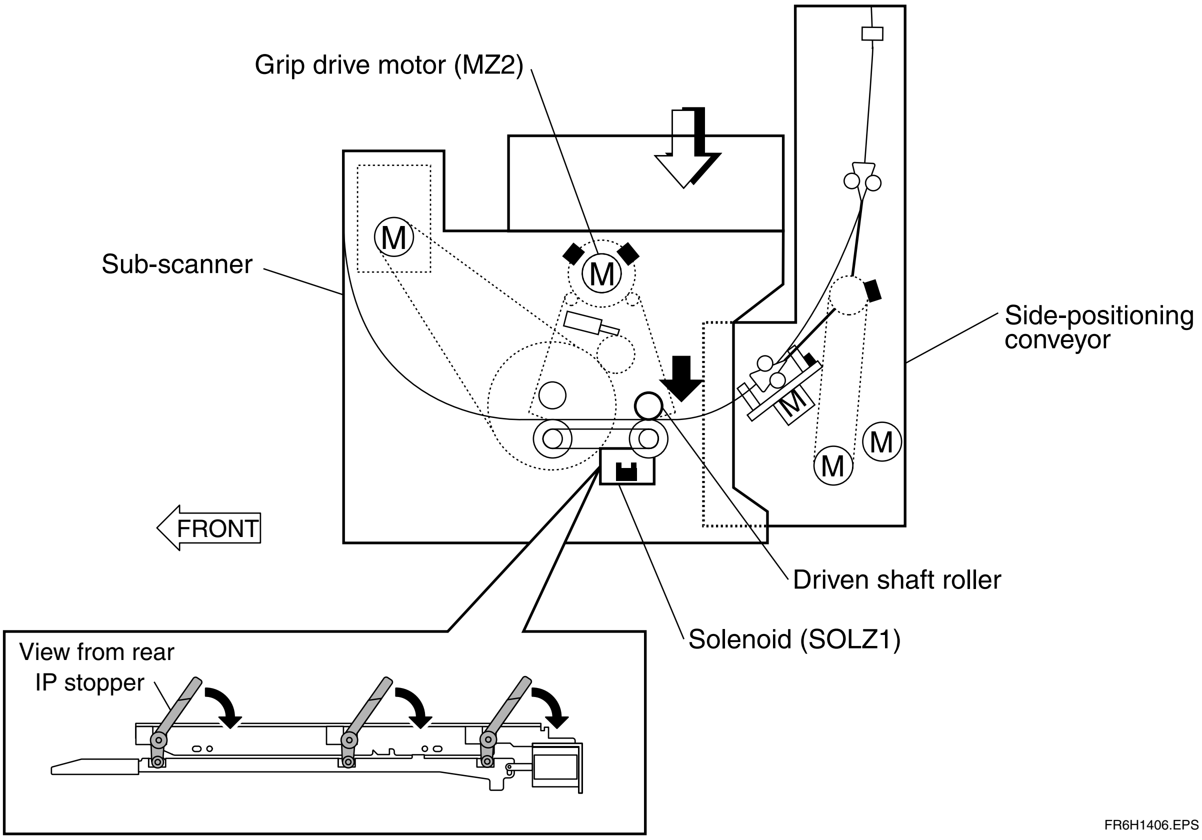
FR6H1405.EPS

## ■ Driving shaft roller/driven shaft roller

When the IP is transported to the IP stopper section, the image read process is started by operating the sub-scanner motor (MZ1) to forward the IP with the aid of driving and driven shaft rollers.

## ■ Driven shaft grip

Once the side-positioning operation is completed, the solenoid (SOLZ1) operates to release the IP stoppers. At this time, the grip drive motor (MZ2) operates so that the driven shaft roller grips the IP, which is conveyed toward the reading position.


Grip drive motor (MZ2)
Sub-scanner
M
M
M
M
M
Side-positioning conveyor
FRONT
Driven shaft roller
Solenoid (SOLZ1)
View from rear
IP stopper

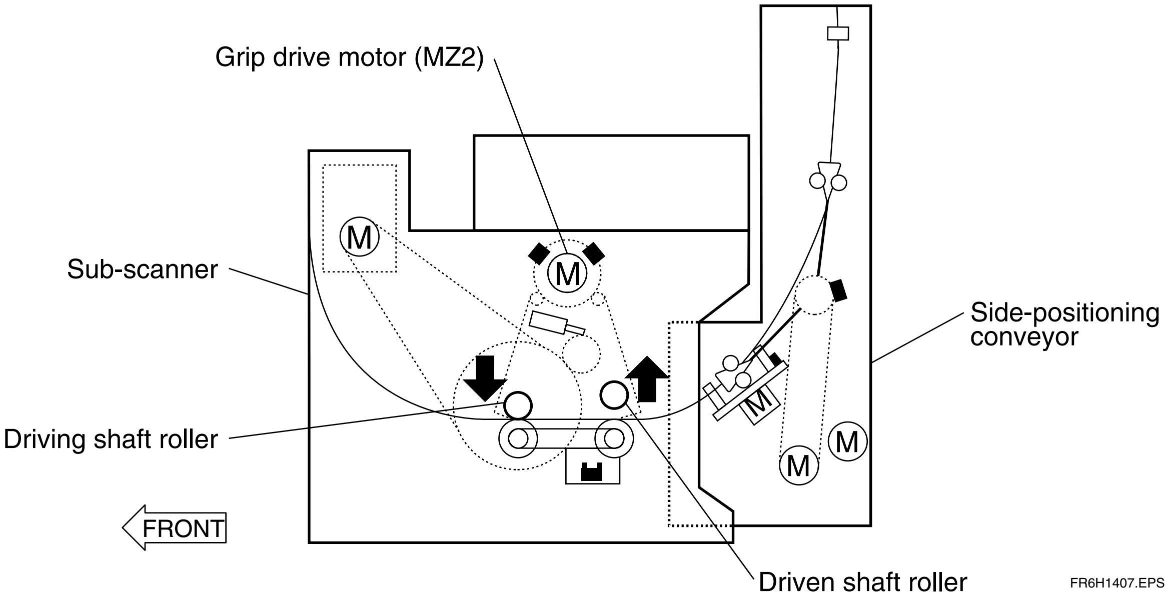
FR6H1406.EPS

## ■ Driving shaft grip

Once the side-positioning operation is completed, the IP stoppers are released, and the IP is gripped by the rotating driven shaft roller to start its conveyance.

When the IP leading edge sensor (SZ1) transitions to CLOSE due to the IP conveyed, IP image reading is initiated.

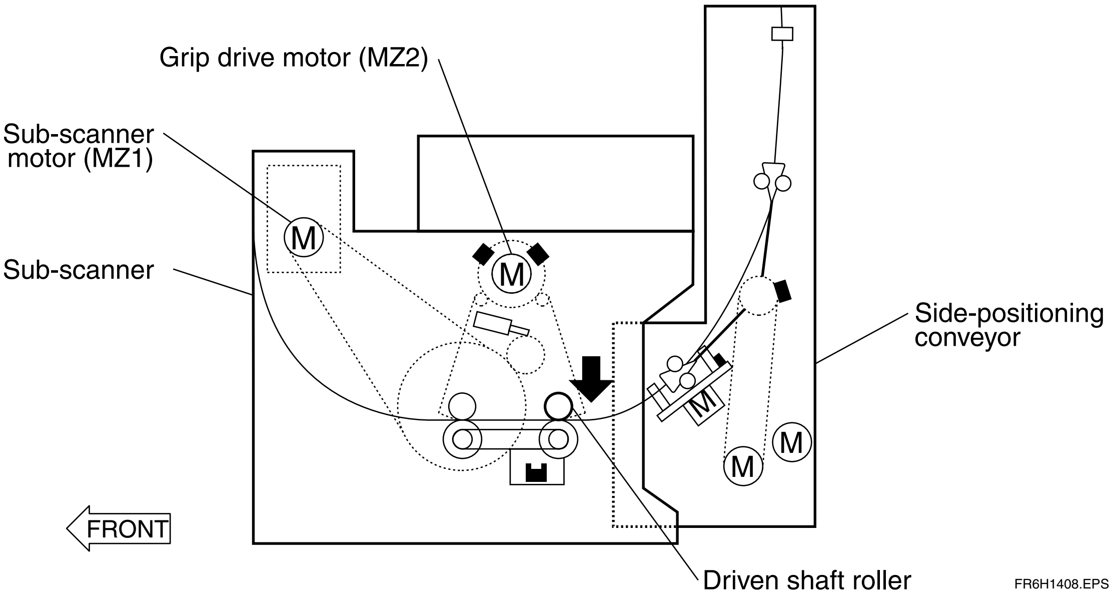
When the driving shaft roller grips the IP, the grip drive motor (MZ2) operates, thereby releasing the grip of the driven shaft roller.


Grip drive motor (MZ2)
Sub-scanner
Side-positioning conveyor
Driving shaft roller
FRONT
Driven shaft roller
M
M
M
M
M
FR6H1407.EPS

## ■ IP load conveyance

After the completion of the image read process, the grip drive motor (MZ2) operates to grip the released driven shaft roller.

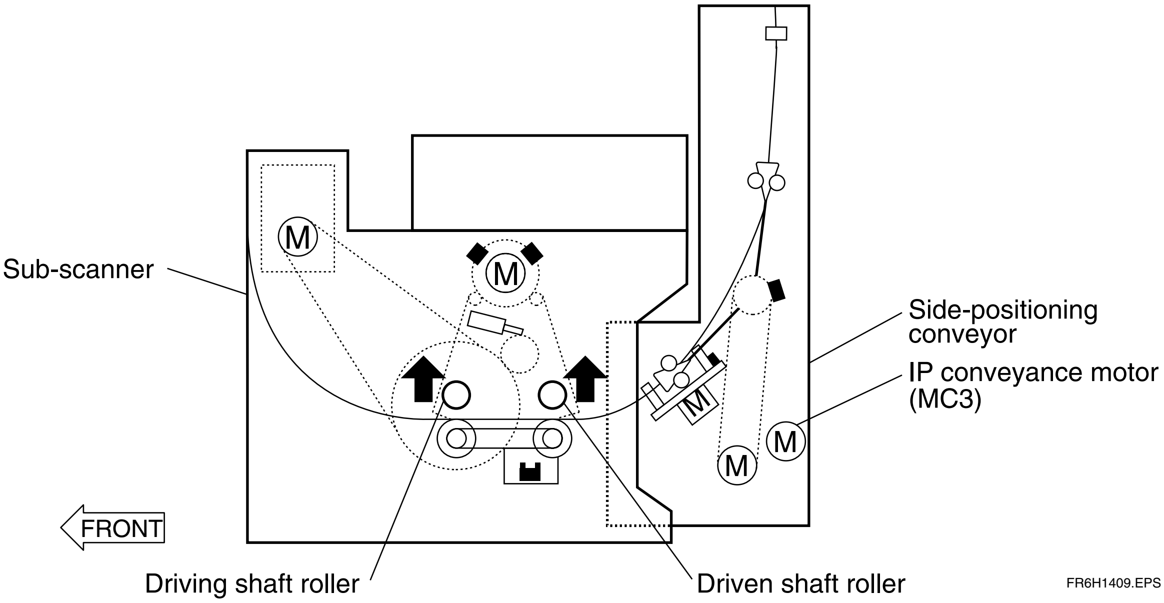
The moment the driven shaft roller is gripped, the sub-scanner motor (MZ1) operates to transport the IP to the side-positioning conveyor.


Grip drive motor (MZ2)
Sub-scanner motor (MZ1)
Sub-scanner
Side-positioning conveyor
M
M
M
M
M
FRONT
Driven shaft roller
FR6H1408.EPS

## ■ Driving/driven shaft grip release

When the IP is transported to the side-positioning conveyor, the driving and driven shaft roller grips are released.

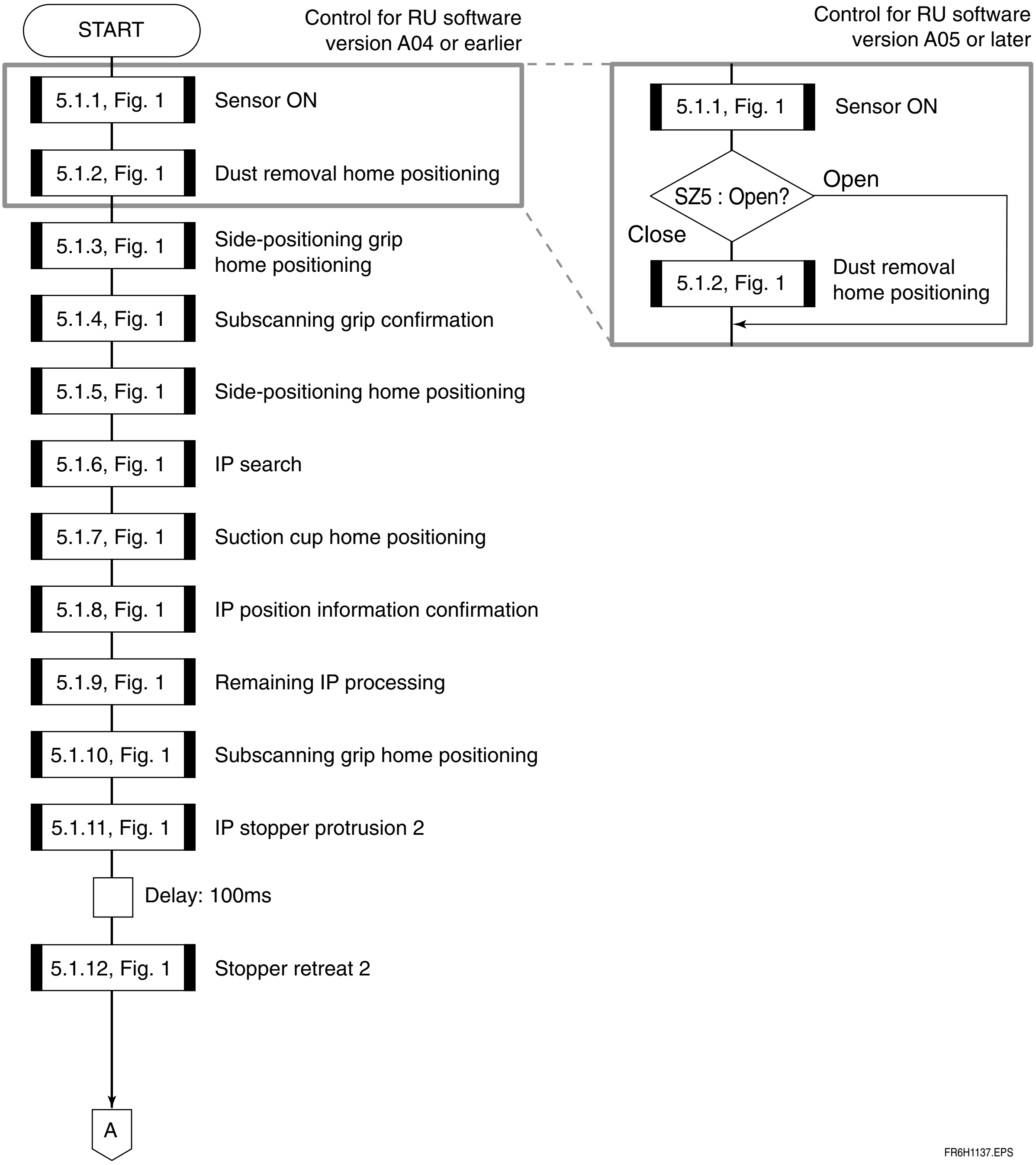
Further, when the driving and driven shaft roller grips are released, the IP conveyance motor (MC3) in the side-positioning conveyor operates to transport the IP.


Sub-scanner
Side-positioning conveyor
IP conveyance motor (MC3)
M
M
M
M
M
FRONT
Driving shaft roller
Driven shaft roller
FR6H1409.EPS

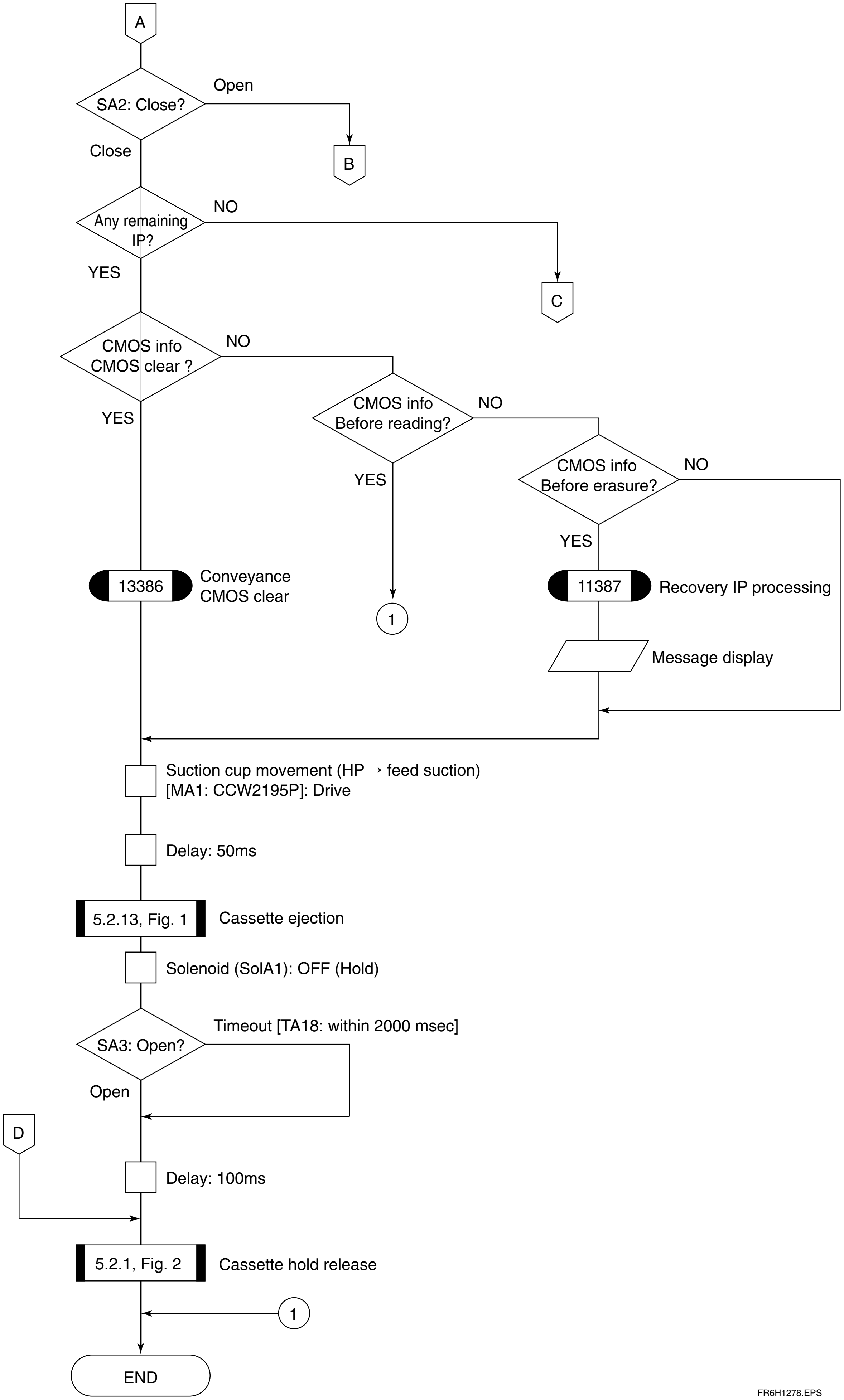
# 5. Mechanical Control Flows

## 5.1 Initialization Process Flow

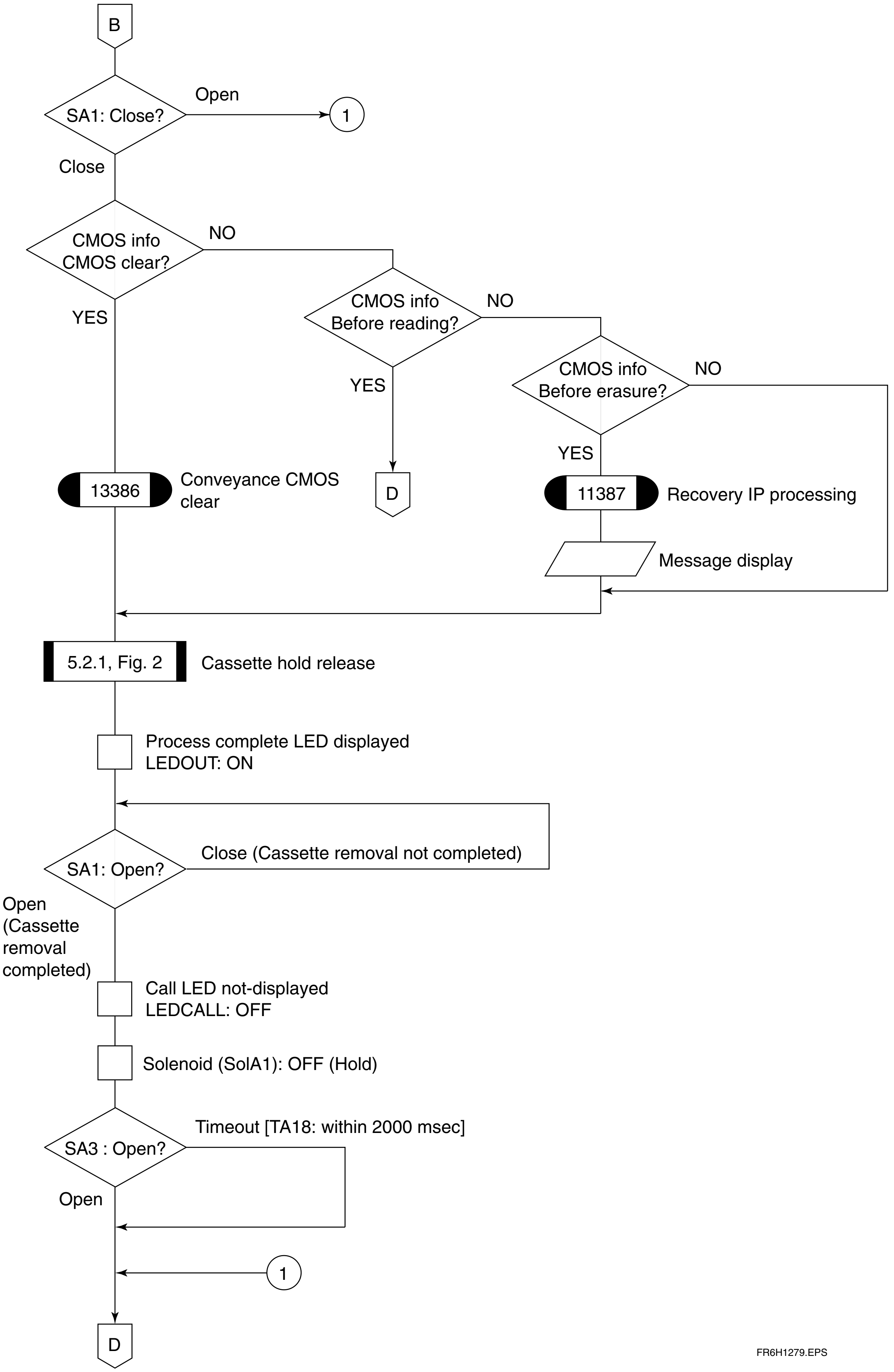
### <Fig. 1 Overall Summary Flow>


START
Control for RU software version A04 or earlier
5.1.1, Fig. 1
Sensor ON
5.1.2, Fig. 1
Dust removal home positioning
5.1.3, Fig. 1
Side-positioning grip home positioning
5.1.4, Fig. 1
Subscanning grip confirmation
5.1.5, Fig. 1
Side-positioning home positioning
5.1.6, Fig. 1
IP search
5.1.7, Fig. 1
Suction cup home positioning
5.1.8, Fig. 1
IP position information confirmation
5.1.9, Fig. 1
Remaining IP processing
5.1.10, Fig. 1
Subscanning grip home positioning
5.1.11, Fig. 1
IP stopper protrusion 2
Delay: 100ms
5.1.12, Fig. 1
Stopper retreat 2
A
Control for RU software version A05 or later
5.1.1, Fig. 1
Sensor ON
SZ5 : Open?
Open
Close
5.1.2, Fig. 1
Dust removal home positioning

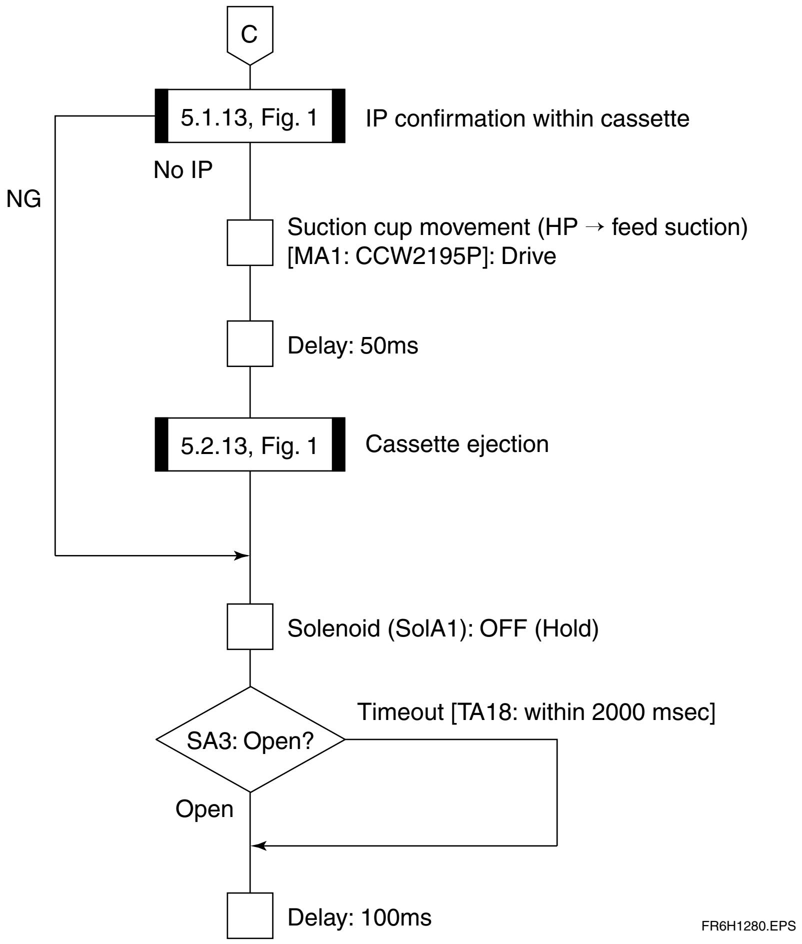
FR6H1137.EPS


A
SA2: Close?
Open
B
Close
Any remaining IP?
NO
C
YES
CMOS info CMOS clear ?
NO
CMOS info Before reading?
NO
CMOS info Before erasure?
NO
YES
YES
YES
13386
Conveyance CMOS clear
1
11387
Recovery IP processing
Message display
Suction cup movement (HP → feed suction) [MA1: CCW2195P]: Drive
Delay: 50ms
5.2.13, Fig. 1
Cassette ejection
Solenoid (SolA1): OFF (Hold)
SA3: Open?
Timeout [TA18: within 2000 msec]
Open
D
Delay: 100ms
5.2.1, Fig. 2
Cassette hold release
1
END

FR6H1278.EPS

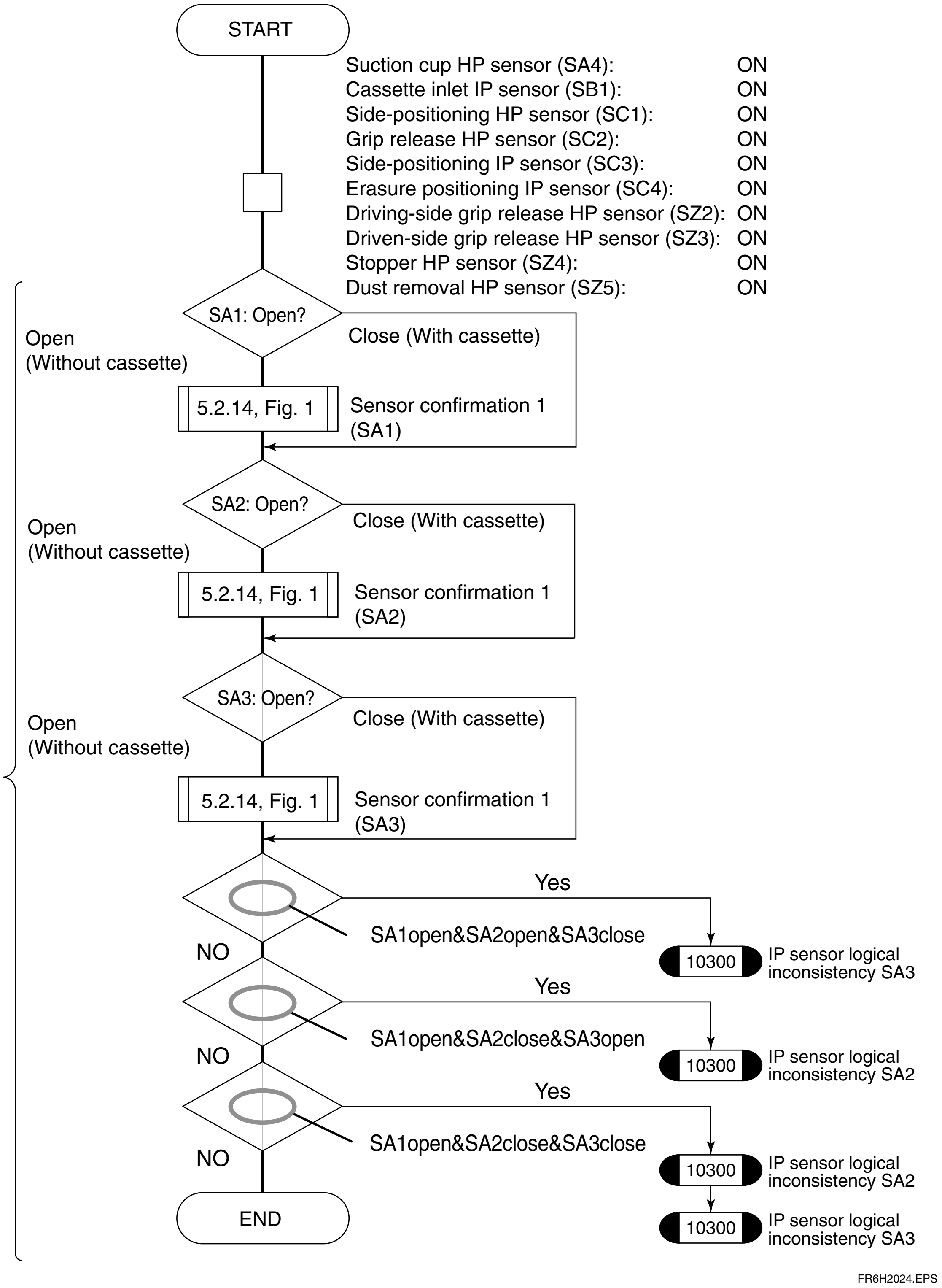

B
SA1: Close?
Open
1
Close
CMOS info
CMOS clear?
NO
CMOS info
Before reading?
NO
CMOS info
Before erasure?
NO
YES
YES
YES
13386
Conveyance CMOS clear
D
11387
Recovery IP processing
Message display
5.2.1, Fig. 2
Cassette hold release
Process complete LED displayed
LEDOUT: ON
SA1: Open?
Close (Cassette removal not completed)
Open (Cassette removal completed)
Call LED not-displayed
LEDCALL: OFF
Solenoid (SolA1): OFF (Hold)
SA3 : Open?
Timeout [TA18: within 2000 msec]
Open
1
D

FR6H1279.EPS

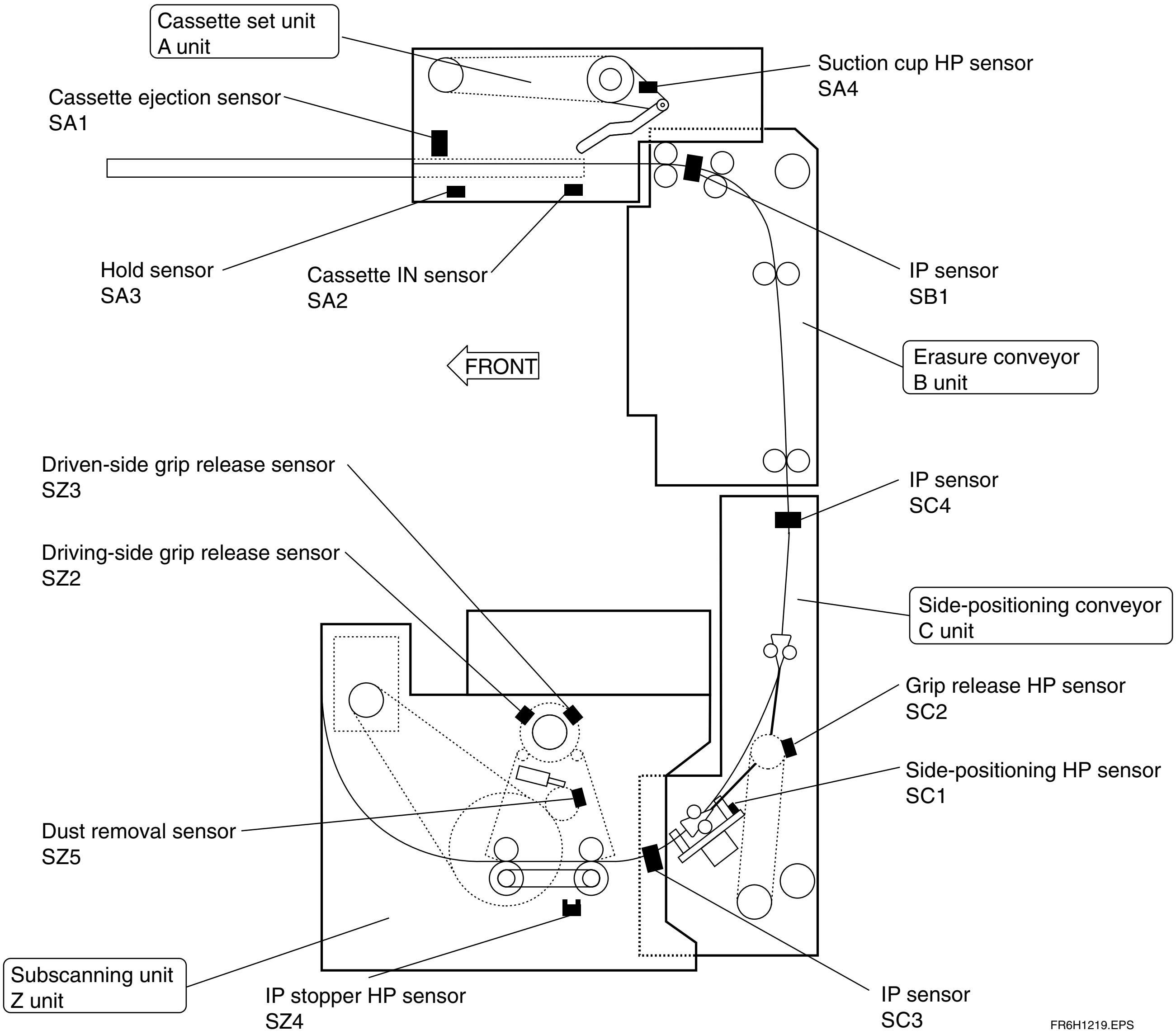

C
5.1.13, Fig. 1
IP confirmation within cassette
No IP
NG
Suction cup movement (HP → feed suction)
[MA1: CCW2195P]: Drive
Delay: 50ms
5.2.13, Fig. 1
Cassette ejection
Solenoid (SolA1): OFF (Hold)
SA3: Open?
Timeout [TA18: within 2000 msec]
Open
Delay: 100ms
FR6H1280.EPS

## 5.1.1 Sensor ON

## <Fig. 1 Sensor ON Flow>


START
Suction cup HP sensor (SA4): ON
Cassette inlet IP sensor (SB1): ON
Side-positioning HP sensor (SC1): ON
Grip release HP sensor (SC2): ON
Side-positioning IP sensor (SC3): ON
Erasure positioning IP sensor (SC4): ON
Driving-side grip release HP sensor (SZ2): ON
Driven-side grip release HP sensor (SZ3): ON
Stopper HP sensor (SZ4): ON
Dust removal HP sensor (SZ5): ON
SA1: Open?
Open
(Without cassette)
Close (With cassette)
5.2.14, Fig. 1
Sensor confirmation 1
(SA1)
SA2: Open?
Open
(Without cassette)
Close (With cassette)
5.2.14, Fig. 1
Sensor confirmation 1
(SA2)
SA3: Open?
Open
(Without cassette)
Close (With cassette)
5.2.14, Fig. 1
Sensor confirmation 1
(SA3)
Yes
SA1open&SA2open&SA3close
NO
10300
IP sensor logical inconsistency SA3
Yes
SA1open&SA2close&SA3open
NO
10300
IP sensor logical inconsistency SA2
Yes
SA1open&SA2close&SA3close
NO
10300
IP sensor logical inconsistency SA2
END
10300
IP sensor logical inconsistency SA3
FR6H2024.EPS

## <I/O Locations>


Cassette set unit
A unit
Cassette ejection sensor
SA1
Suction cup HP sensor
SA4
Hold sensor
SA3
Cassette IN sensor
SA2
IP sensor
SB1
Erasure conveyor
B unit
FRONT
Driven-side grip release sensor
SZ3
IP sensor
SC4
Driving-side grip release sensor
SZ2
Side-positioning conveyor
C unit
Grip release HP sensor
SC2
Side-positioning HP sensor
SC1
Dust removal sensor
SZ5
Subscanning unit
Z unit
IP stopper HP sensor
SZ4
IP sensor
SC3
FR6H1219.EPS

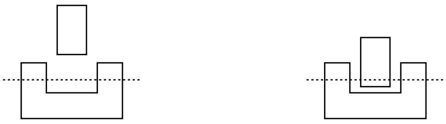
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA1 | Cassette ejection sensor | PI (5mm) | Detects that the cassette has been ejected. |
| SA2 | Cassette IN sensor | PI (5mm) | Detects that the cassette has been inserted. |
| SA3 | Cassette hold sensor | PI (5mm) | Detects the cassette hold completion. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SB1 | Cassette inlet IP sensor | PI (19mm) | Detects the IP. |
| SC1 | Side-positioning HP sensor | PI (5mm) | Detects that it is in the side-positioning home position. |
| SC2 | Grip release HP sensor | PI (5mm) | Detects that it is in the grip release home position. |
| SC3 | Side-positioning IP sensor | PI (19mm) | Detects the IP. |
| SC4 | Erasure positioning IP sensor | PI (19mm) | Detects the IP. |
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SZ5 | Dust removal HP sensor | PI (5mm) | Detects that the dust removal brush is in its home position. |

TR6H1079.EPS

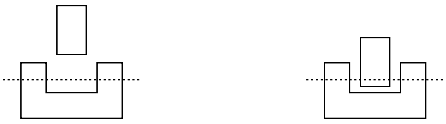
## <Sensor ON/OFF Status>

SA1/SA3/SA4/SC1/SC2/SZ2/SZ3/SZ4/SZ5



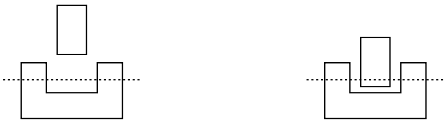
OFF: Open (not blocked) ON: Close (blocked)

SA2



OFF: Open (without cassette) ON: Close (with cassette)

SB1/SC3/SC4



OFF: Open (no IP) ON: Close (IP found)

FR6H1247.EPS

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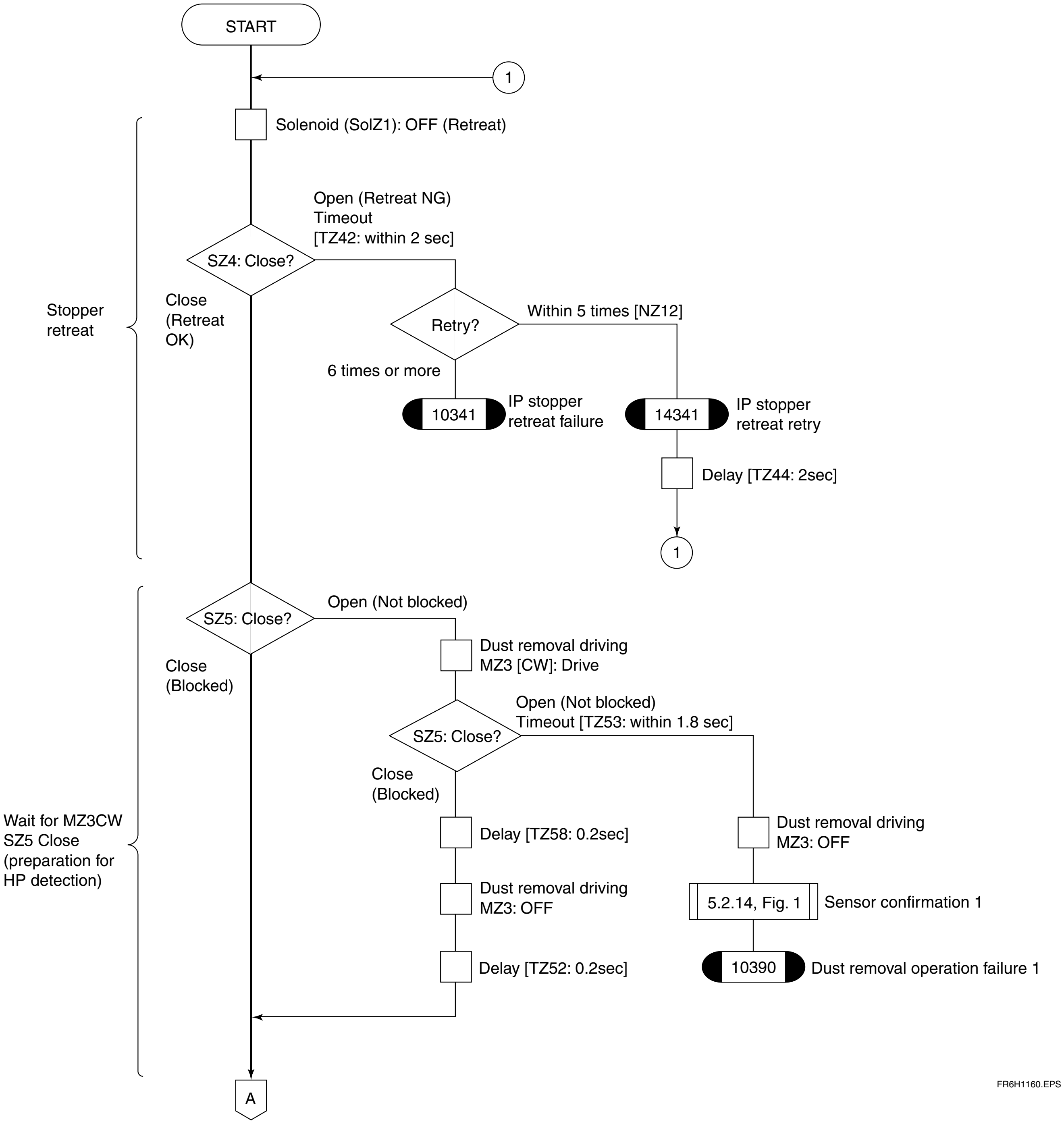
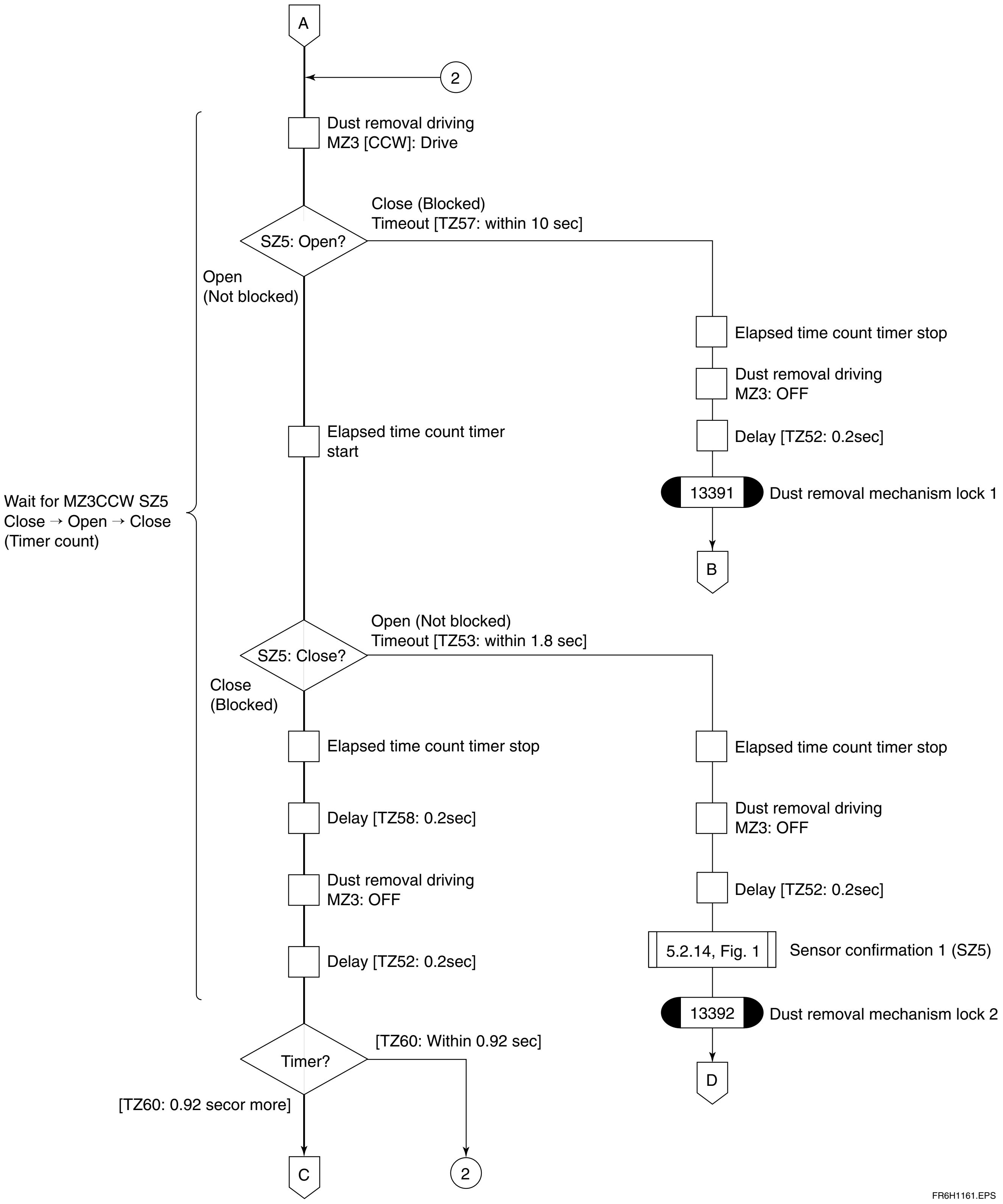
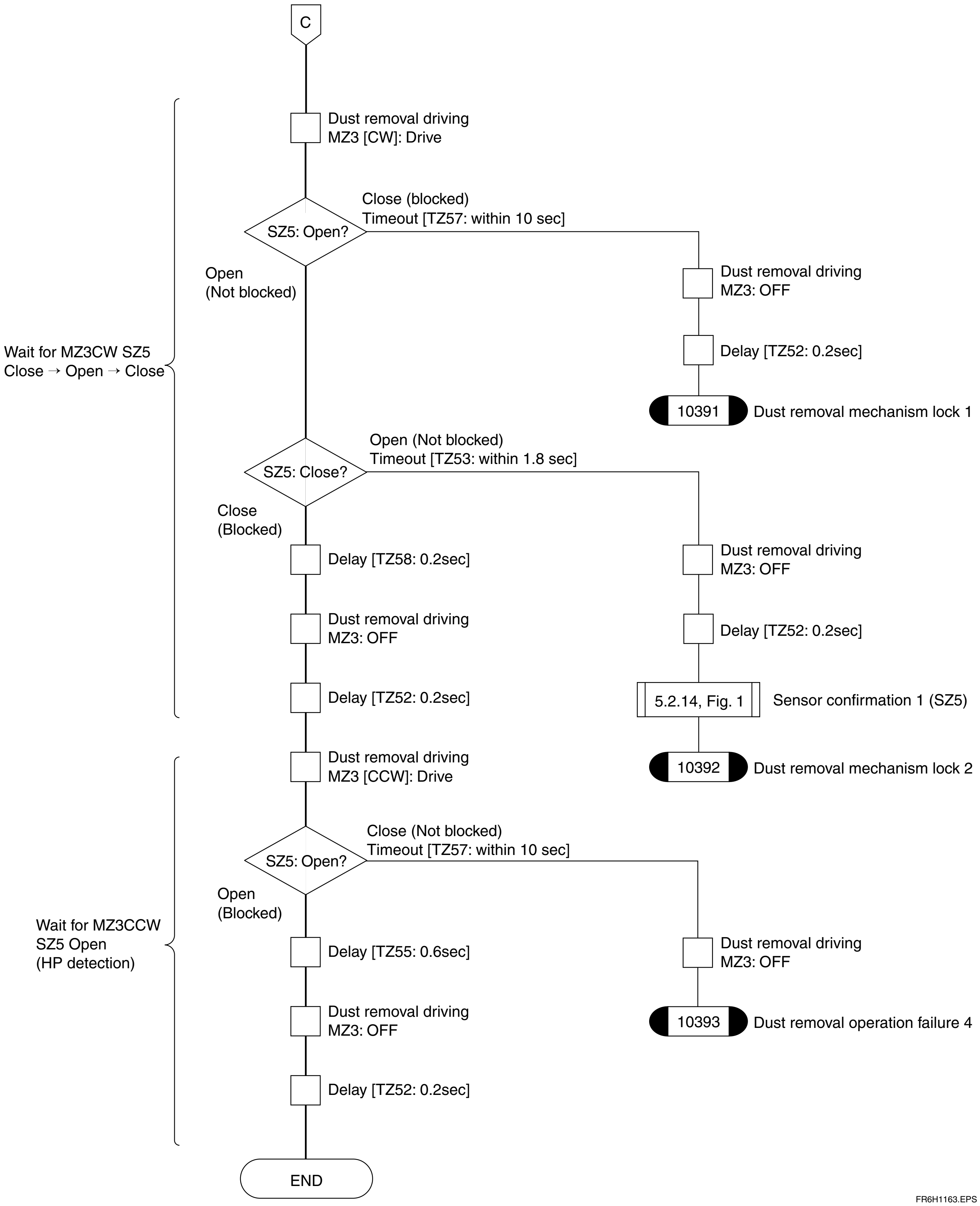
## 5.1.2 Dust Removal Home Positioning

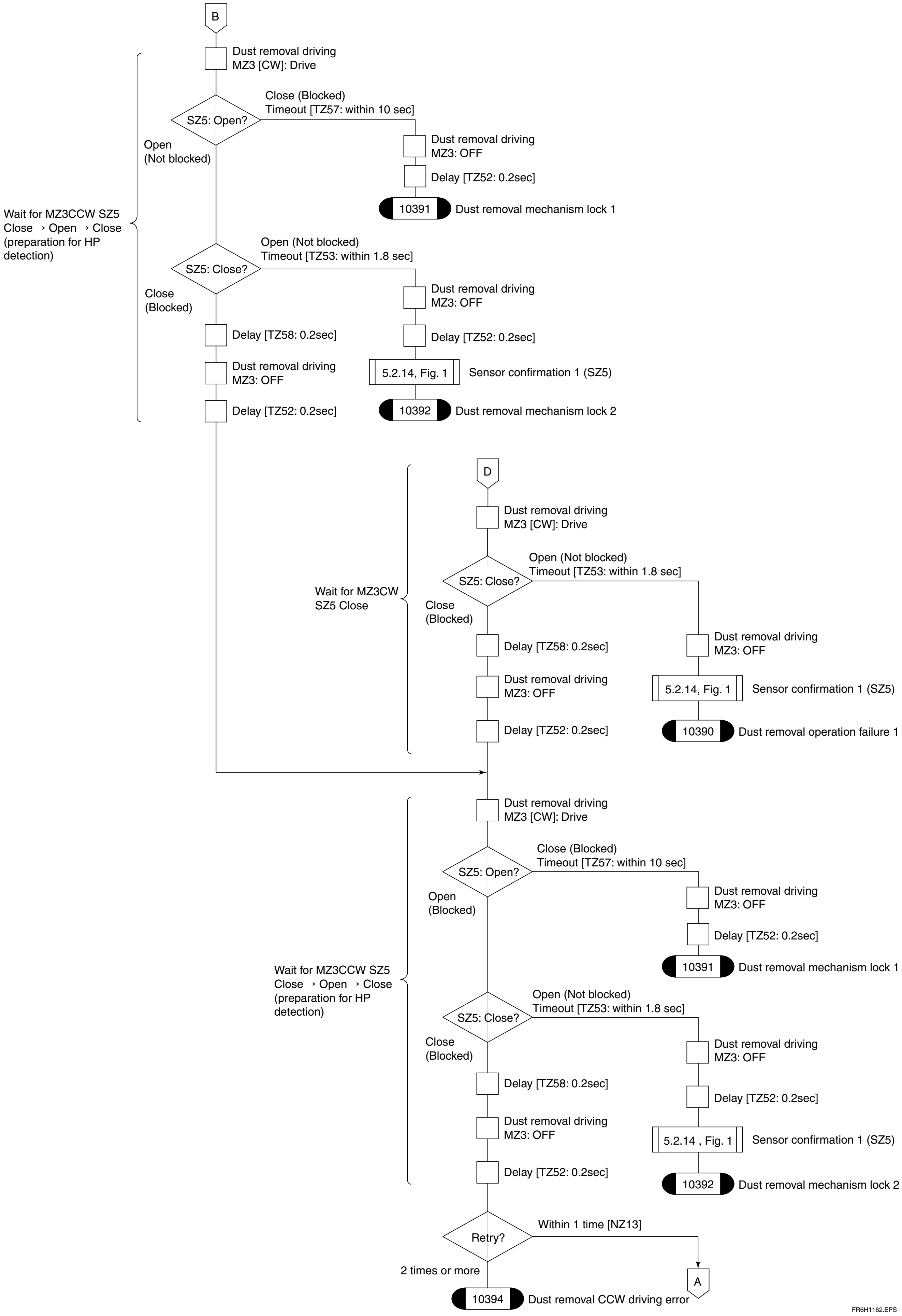
## <Fig. 1 Dust Removal Home Positioning Flow>


START
1
Solenoid (SolZ1): OFF (Retreat)
Open (Retreat NG)
Timeout
[TZ42: within 2 sec]
SZ4: Close?
Stopper
retreat
Close
(Retreat
OK)
Retry?
Within 5 times [NZ12]
6 times or more
10341
IP stopper
retreat failure
14341
IP stopper
retreat retry
Delay [TZ44: 2sec]
1
SZ5: Close?
Open (Not blocked)
Close
(Blocked)
Dust removal driving
MZ3 [CW]: Drive
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
SZ5: Close?
Close
(Blocked)
Wait for MZ3CW
SZ5 Close
(preparation for
HP detection)
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Dust removal driving
MZ3: OFF
5.2.14, Fig. 1
Sensor confirmation 1
Delay [TZ52: 0.2sec]
10390
Dust removal operation failure 1
A
FR6H1160.EPS

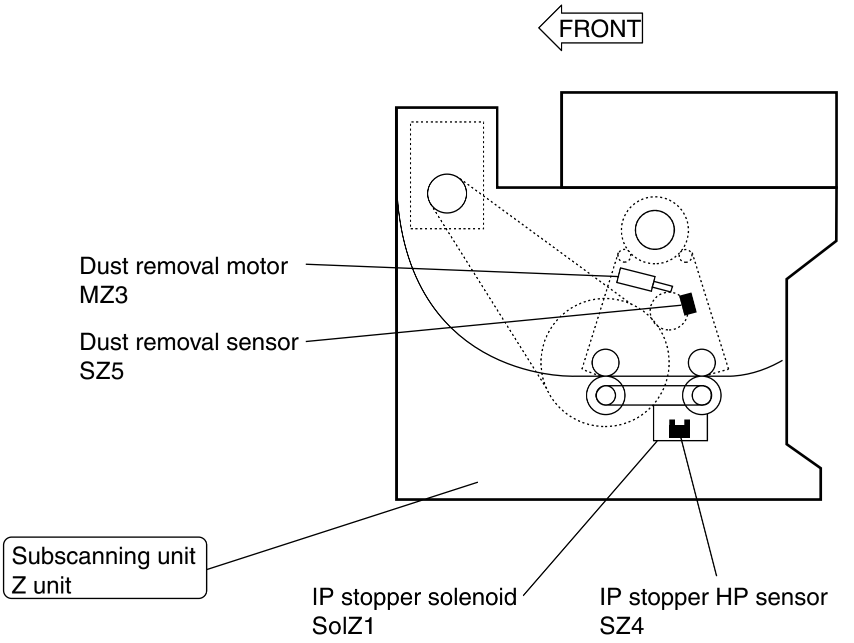

A
2
Dust removal driving
MZ3 [CCW]: Drive
Close (Blocked)
Timeout [TZ57: within 10 sec]
SZ5: Open?
Open
(Not blocked)
Elapsed time count timer stop
Dust removal driving
MZ3: OFF
Elapsed time count timer
start
Delay [TZ52: 0.2sec]
13391
Dust removal mechanism lock 1
Wait for MZ3CCW SZ5
Close → Open → Close
(Timer count)
B
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
SZ5: Close?
Close
(Blocked)
Elapsed time count timer stop
Elapsed time count timer stop
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
13392
Dust removal mechanism lock 2
[TZ60: Within 0.92 sec]
Timer?
D
[TZ60: 0.92 secor more]
C
2

FR6H1161.EPS


C
Dust removal driving
MZ3 [CW]: Drive
SZ5: Open?
Close (blocked)
Timeout [TZ57: within 10 sec]
Open
(Not blocked)
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
10391
Dust removal mechanism lock 1
Wait for MZ3CW SZ5
Close → Open → Close
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Close
(Blocked)
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Dust removal driving
MZ3 [CCW]: Drive
10392
Dust removal mechanism lock 2
SZ5: Open?
Close (Not blocked)
Timeout [TZ57: within 10 sec]
Open
(Blocked)
Wait for MZ3CCW
SZ5 Open
(HP detection)
Delay [TZ55: 0.6sec]
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
10393
Dust removal operation failure 4
END
FR6H1163.EPS


B
Dust removal driving
MZ3 [CW]: Drive
SZ5: Open?
Close (Blocked)
Timeout [TZ57: within 10 sec]
Open
(Not blocked)
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
10391
Dust removal mechanism lock 1
Wait for MZ3CCW SZ5
Close → Open → Close
(preparation for HP
detection)
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Close
(Blocked)
Dust removal driving
MZ3: OFF
Delay [TZ58: 0.2sec]
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
10392
Dust removal mechanism lock 2
D
Dust removal driving
MZ3 [CW]: Drive
Wait for MZ3CW
SZ5 Close
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Close
(Blocked)
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Dust removal driving
MZ3: OFF
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
10390
Dust removal operation failure 1
Dust removal driving
MZ3 [CW]: Drive
SZ5: Open?
Close (Blocked)
Timeout [TZ57: within 10 sec]
Open
(Blocked)
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
10391
Dust removal mechanism lock 1
Wait for MZ3CCW SZ5
Close → Open → Close
(preparation for HP
detection)
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Close
(Blocked)
Dust removal driving
MZ3: OFF
Delay [TZ58: 0.2sec]
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
5.2.14 , Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
10392
Dust removal mechanism lock 2
Retry?
Within 1 time [NZ13]
2 times or more
A
10394
Dust removal CCW driving error
FR6H1162.EPS

## <I/O Locations>


FRONT
Dust removal motor
MZ3
Dust removal sensor
SZ5
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4

FR6H1220.EPS

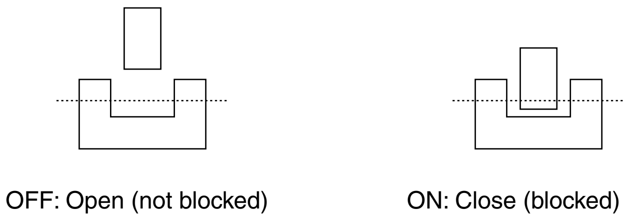
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |

TR6H1072.EPS

## <Sensor ON/OFF Status>

SZ4/SZ5


OFF: Open (not blocked)
ON: Close (blocked)

FR6H1248.EPS

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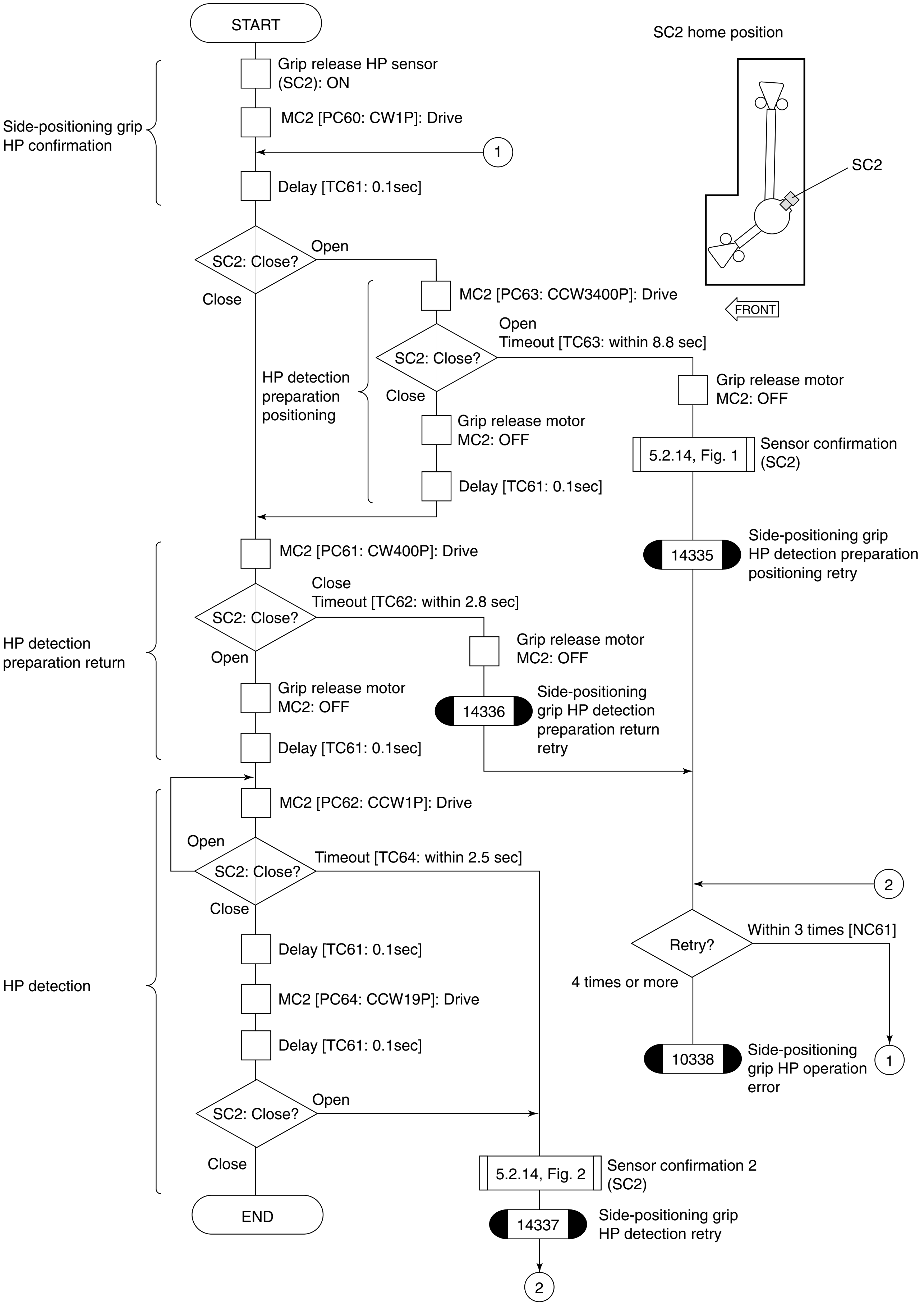
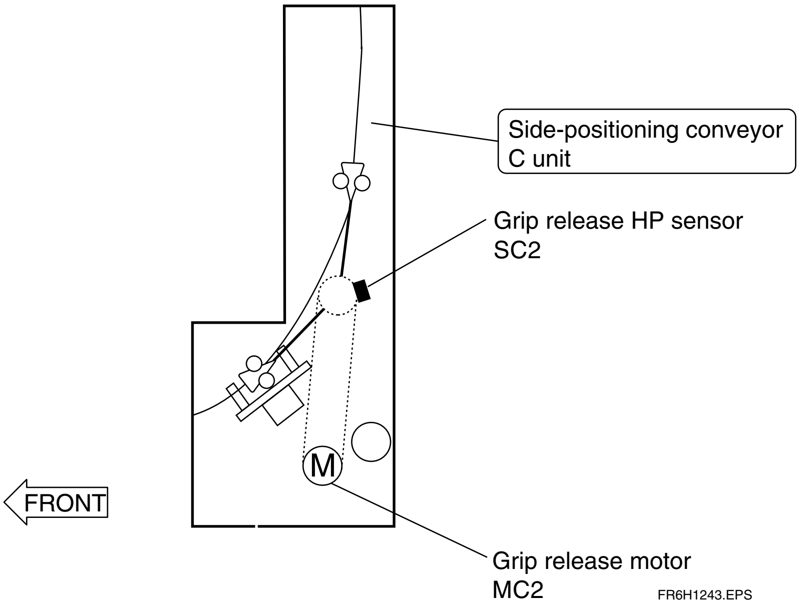
## 5.1.3 Side-Positioning Grip Home Positioning

## <Fig. 1 Side-Positioning Grip Home Positioning Flow>


START
Side-positioning grip HP confirmation
Grip release HP sensor (SC2): ON
MC2 [PC60: CW1P]: Drive
1
Delay [TC61: 0.1sec]
SC2: Close?
Open
Close
HP detection preparation positioning
MC2 [PC63: CCW3400P]: Drive
SC2: Close?
Open
Timeout [TC63: within 8.8 sec]
Close
Grip release motor MC2: OFF
Delay [TC61: 0.1sec]
Grip release motor MC2: OFF
5.2.14, Fig. 1
Sensor confirmation (SC2)
14335
Side-positioning grip HP detection preparation positioning retry
SC2 home position
SC2
FRONT
HP detection preparation return
MC2 [PC61: CW400P]: Drive
SC2: Close?
Close
Timeout [TC62: within 2.8 sec]
Open
Grip release motor MC2: OFF
Grip release motor MC2: OFF
14336
Side-positioning grip HP detection preparation return retry
Delay [TC61: 0.1sec]
HP detection
MC2 [PC62: CCW1P]: Drive
Open
SC2: Close?
Timeout [TC64: within 2.5 sec]
Close
Delay [TC61: 0.1sec]
MC2 [PC64: CCW19P]: Drive
Delay [TC61: 0.1sec]
SC2: Close?
Open
Close
END
2
Retry?
Within 3 times [NC61]
4 times or more
10338
Side-positioning grip HP operation error
1
5.2.14, Fig. 2
Sensor confirmation 2 (SC2)
14337
Side-positioning grip HP detection retry
2

FR6H1216.EPS

## <I/O Locations>


Side-positioning conveyor C unit
Grip release HP sensor SC2
FRONT
M
Grip release motor MC2

FR6H1243.EPS

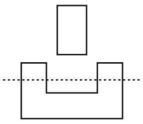
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SC2 | Grip release HP sensor | PI (5mm) | Detects that it is in the grip release home position. |
| MC2 | Grip release motor | Pulse motor | Drives to release the grip. |

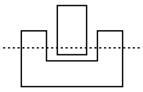
TR6H1091.EPS

## <Sensor ON/OFF Status>

SA1/SA3/SA4

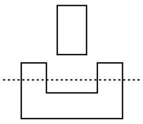


OFF: Open (not blocked)

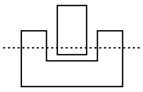


ON: Close (blocked)

SA2



OFF: Open (without cassette)

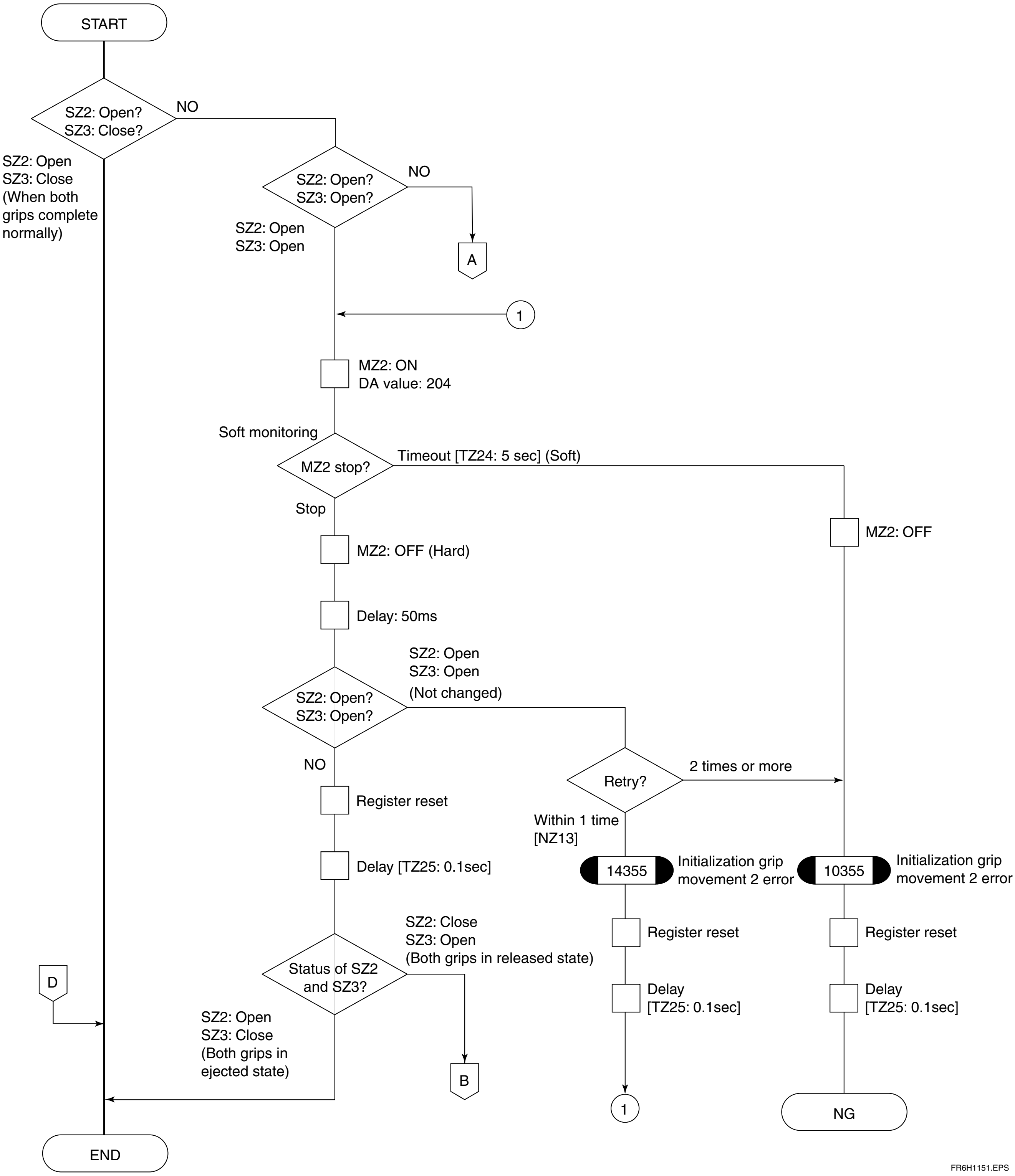


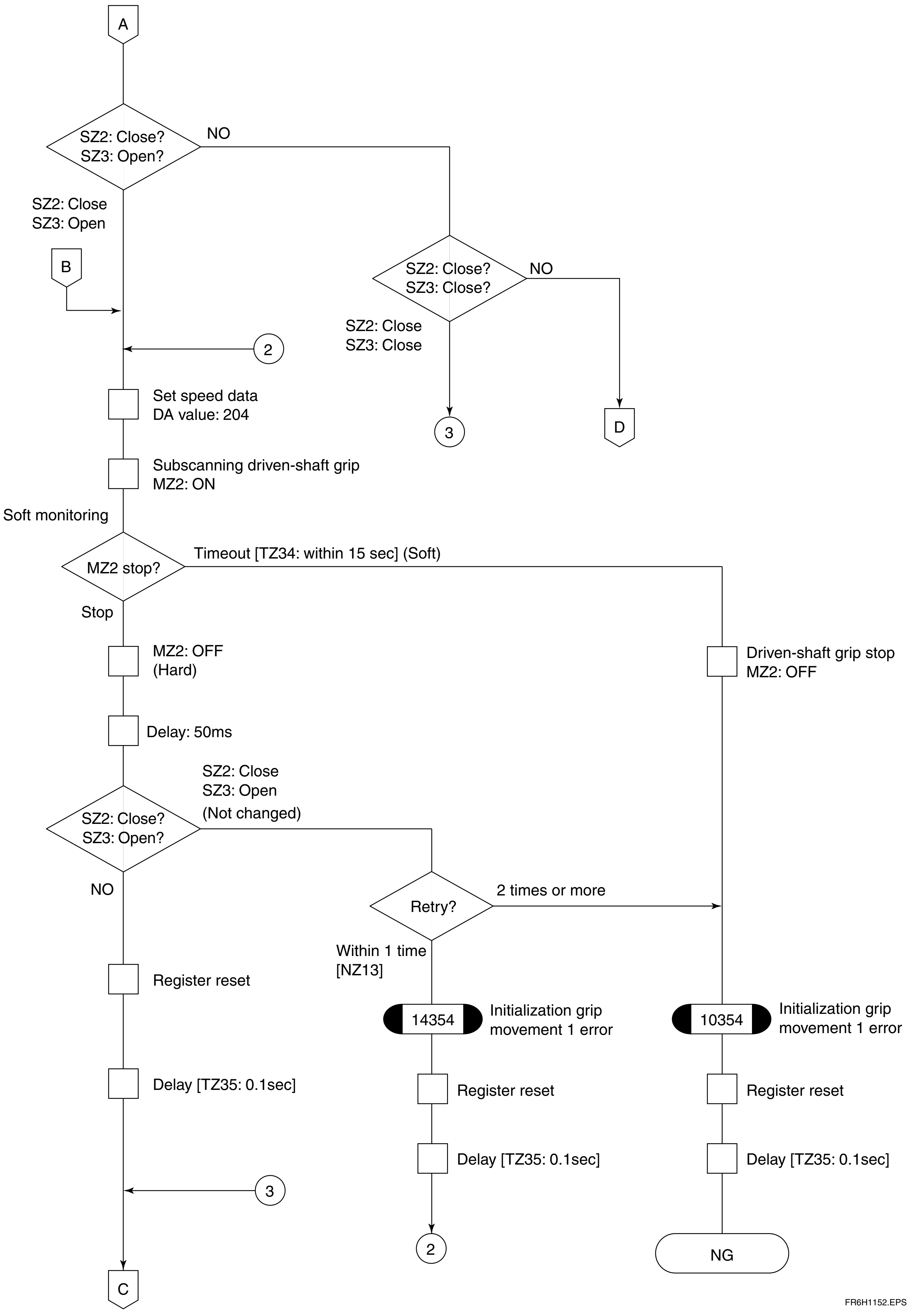
ON: Close (with cassette)

FR6H1268.EPS

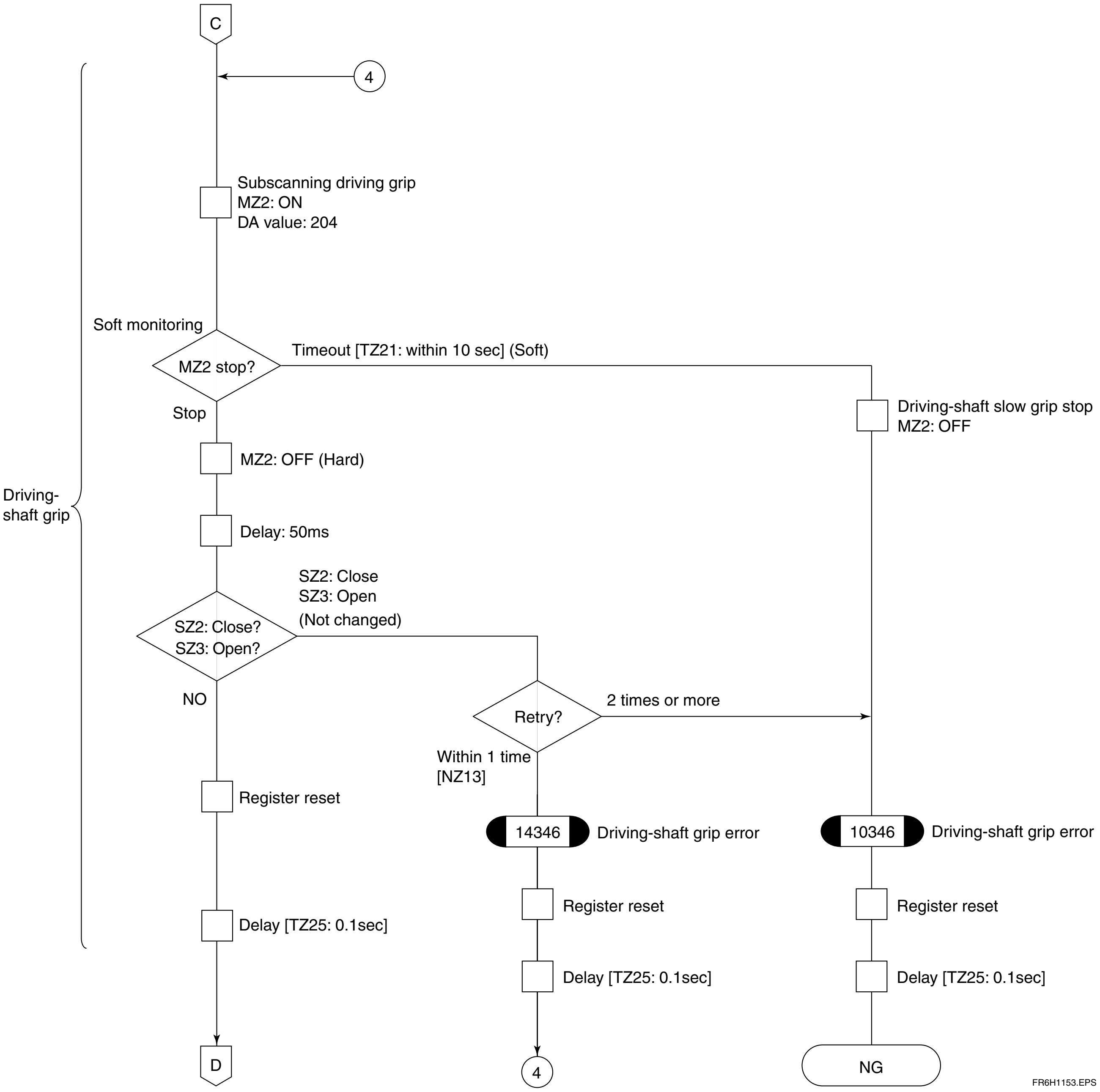
## 5.1.4 Subscanning Grip Confirmation

## <Fig. 1 Subscanning Grip Confirmation Flow>

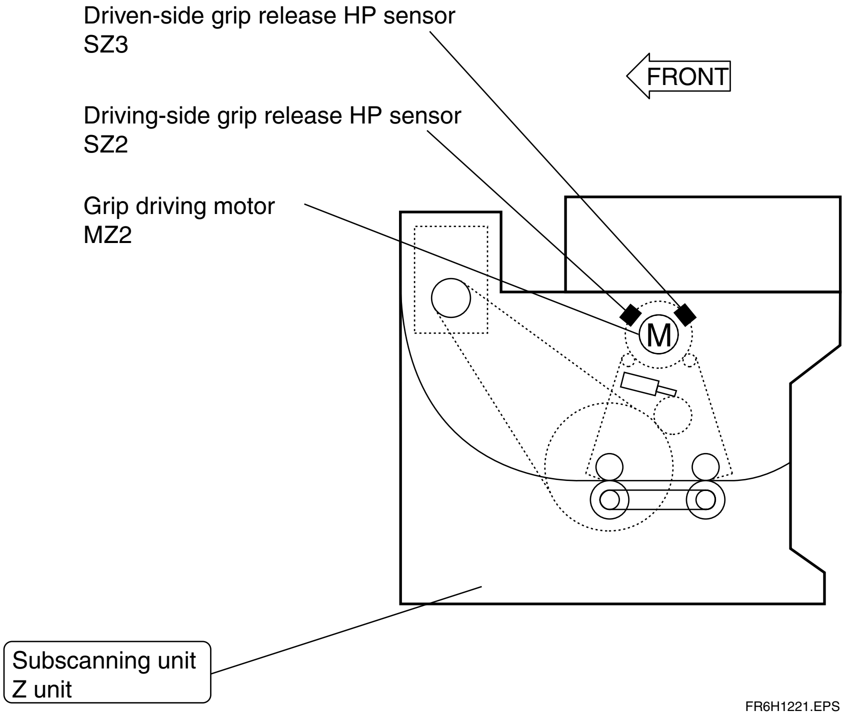

START
SZ2: Open?
SZ3: Close?
NO
SZ2: Open
SZ3: Close
(When both
grips complete
normally)
SZ2: Open?
SZ3: Open?
NO
SZ2: Open
SZ3: Open
A
1
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
Timeout [TZ24: 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Open
(Not changed)
SZ2: Open?
SZ3: Open?
NO
Retry?
2 times or more
Register reset
Within 1 time
[NZ13]
Delay [TZ25: 0.1sec]
14355
Initialization grip
movement 2 error
10355
Initialization grip
movement 2 error
SZ2: Close
SZ3: Open
(Both grips in released state)
Register reset
Register reset
Status of SZ2
and SZ3?
D
Delay
[TZ25: 0.1sec]
Delay
[TZ25: 0.1sec]
SZ2: Open
SZ3: Close
(Both grips in
ejected state)
B
1
NG
END
FR6H1151.EPS


A
SZ2: Close?
SZ3: Open?
NO
SZ2: Close
SZ3: Open
B
SZ2: Close?
SZ3: Close?
NO
SZ2: Close
SZ3: Close
2
Set speed data
DA value: 204
3
D
Subscanning driven-shaft grip
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Stop
MZ2: OFF
(Hard)
Driven-shaft grip stop
MZ2: OFF
Delay: 50ms
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
14354
Initialization grip
movement 1 error
10354
Initialization grip
movement 1 error
Delay [TZ35: 0.1sec]
Register reset
Delay [TZ35: 0.1sec]
Register reset
Delay [TZ35: 0.1sec]
3
2
NG
C

FR6H1152.EPS


C
4
Subscanning driving grip
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
Timeout [TZ21: within 10 sec] (Soft)
Stop
Driving-shaft slow grip stop
MZ2: OFF
MZ2: OFF (Hard)
Driving-
shaft grip
Delay: 50ms
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
14346
Driving-shaft grip error
10346
Driving-shaft grip error
Register reset
Register reset
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
D
4
NG
FR6H1153.EPS

## <I/O Locations>


Driven-side grip release HP sensor
SZ3
FRONT
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
M
Subscanning unit
Z unit

FR6H1221.EPS

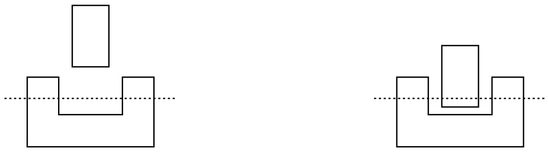
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |

TR6H1074.EPS

## <Sensor ON/OFF Status>

SZ2/SZ3



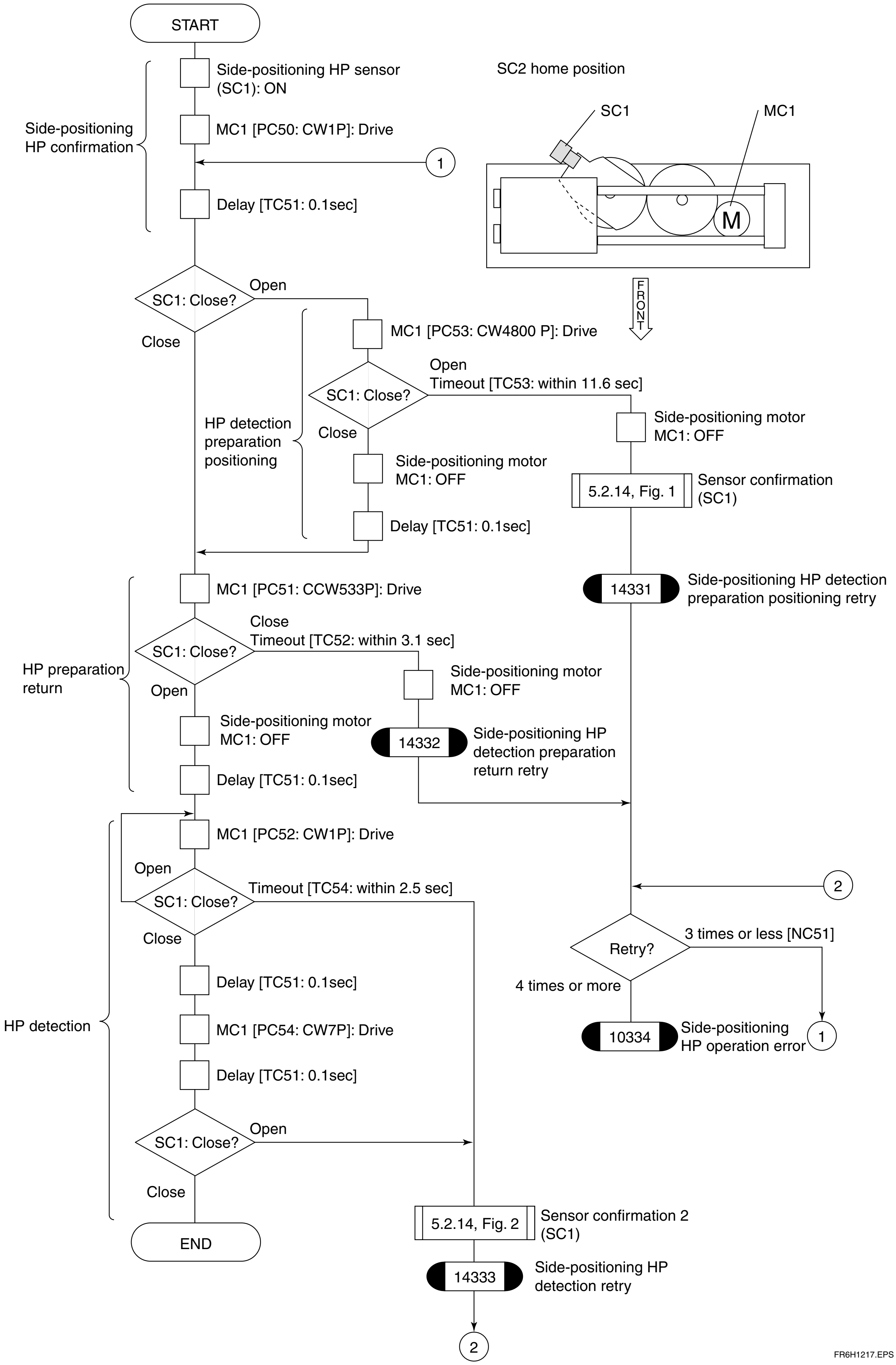
OFF: Open (not blocked)

ON: Close (blocked)

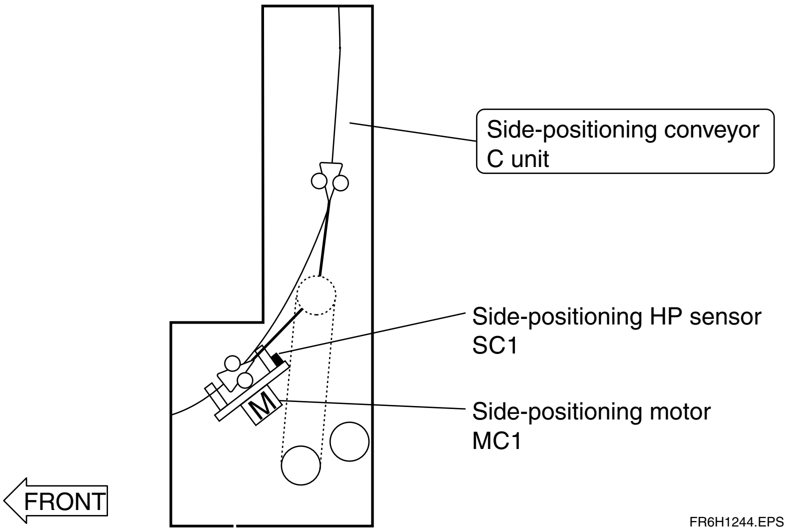
FR6H1249.EPS

## 5.1.5 Side-Positioning Home Positioning

## <Fig. 1 Side-Positioning Home Positioning Flow>


START
Side-positioning HP confirmation
Side-positioning HP sensor (SC1): ON
MC1 [PC50: CW1P]: Drive
1
Delay [TC51: 0.1sec]
SC2 home position
SC1
MC1
M
FRONT
SC1: Close?
Open
Close
MC1 [PC53: CW4800 P]: Drive
HP detection preparation positioning
SC1: Close?
Open
Timeout [TC53: within 11.6 sec]
Close
Side-positioning motor MC1: OFF
Delay [TC51: 0.1sec]
Side-positioning motor MC1: OFF
5.2.14, Fig. 1
Sensor confirmation (SC1)
14331
Side-positioning HP detection preparation positioning retry
HP preparation return
MC1 [PC51: CCW533P]: Drive
SC1: Close?
Close
Timeout [TC52: within 3.1 sec]
Open
Side-positioning motor MC1: OFF
Side-positioning motor MC1: OFF
14332
Side-positioning HP detection preparation return retry
Delay [TC51: 0.1sec]
HP detection
MC1 [PC52: CW1P]: Drive
Open
SC1: Close?
Timeout [TC54: within 2.5 sec]
Close
2
Retry?
3 times or less [NC51]
4 times or more
Delay [TC51: 0.1sec]
MC1 [PC54: CW7P]: Drive
10334
Side-positioning HP operation error
1
Delay [TC51: 0.1sec]
SC1: Close?
Open
Close
END
5.2.14, Fig. 2
Sensor confirmation 2 (SC1)
14333
Side-positioning HP detection retry
2
FR6H1217.EPS

## <I/O Locations>


Side-positioning conveyor C unit
Side-positioning HP sensor SC1
Side-positioning motor MC1
M
FRONT

FR6H1244.EPS

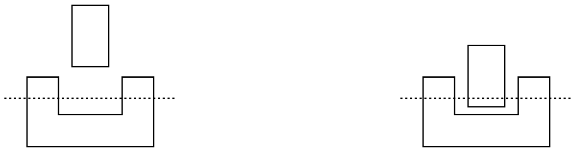
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SC1 | Side-positioning HP sensor | PI (5mm) | Detects that it is in the side-positioning home position. |
| MC1 | Side-positioning motor | Pulse motor | Drives the side-positioning mechanism. |

TR6H1092.EPS

## <Sensor ON/OFF Status>

SC1



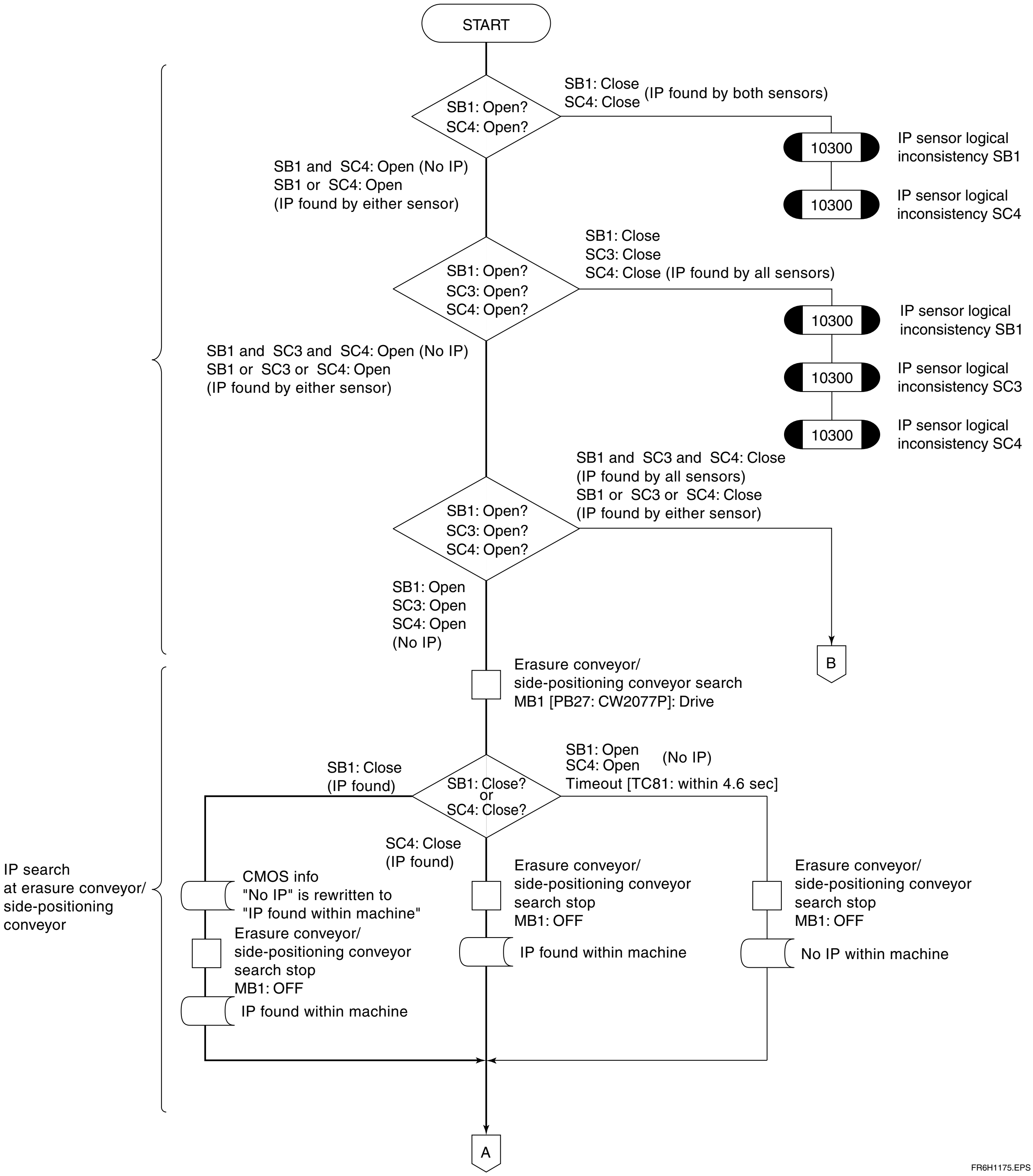
OFF: Open (not blocked)

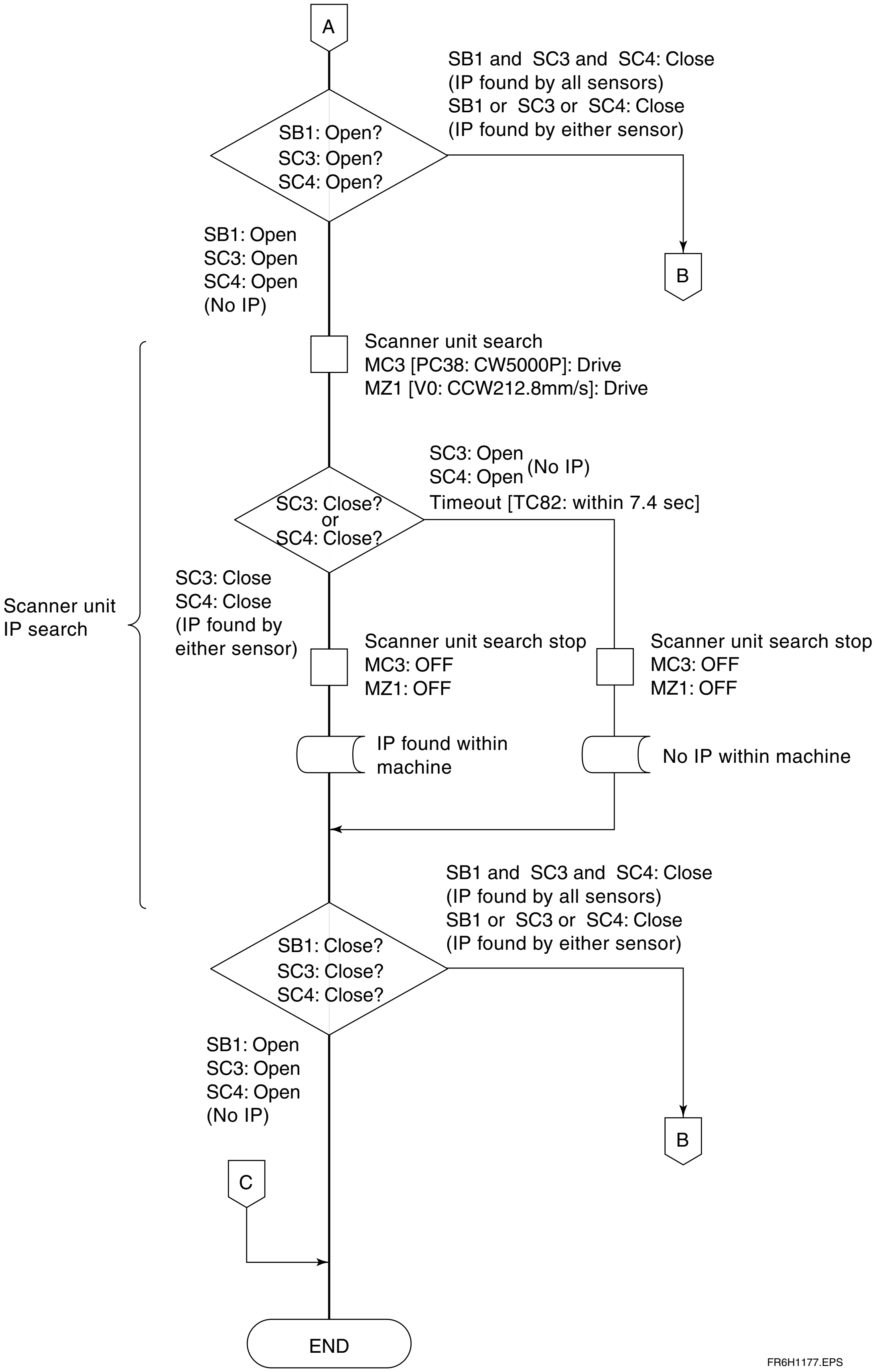
ON: Close (blocked)

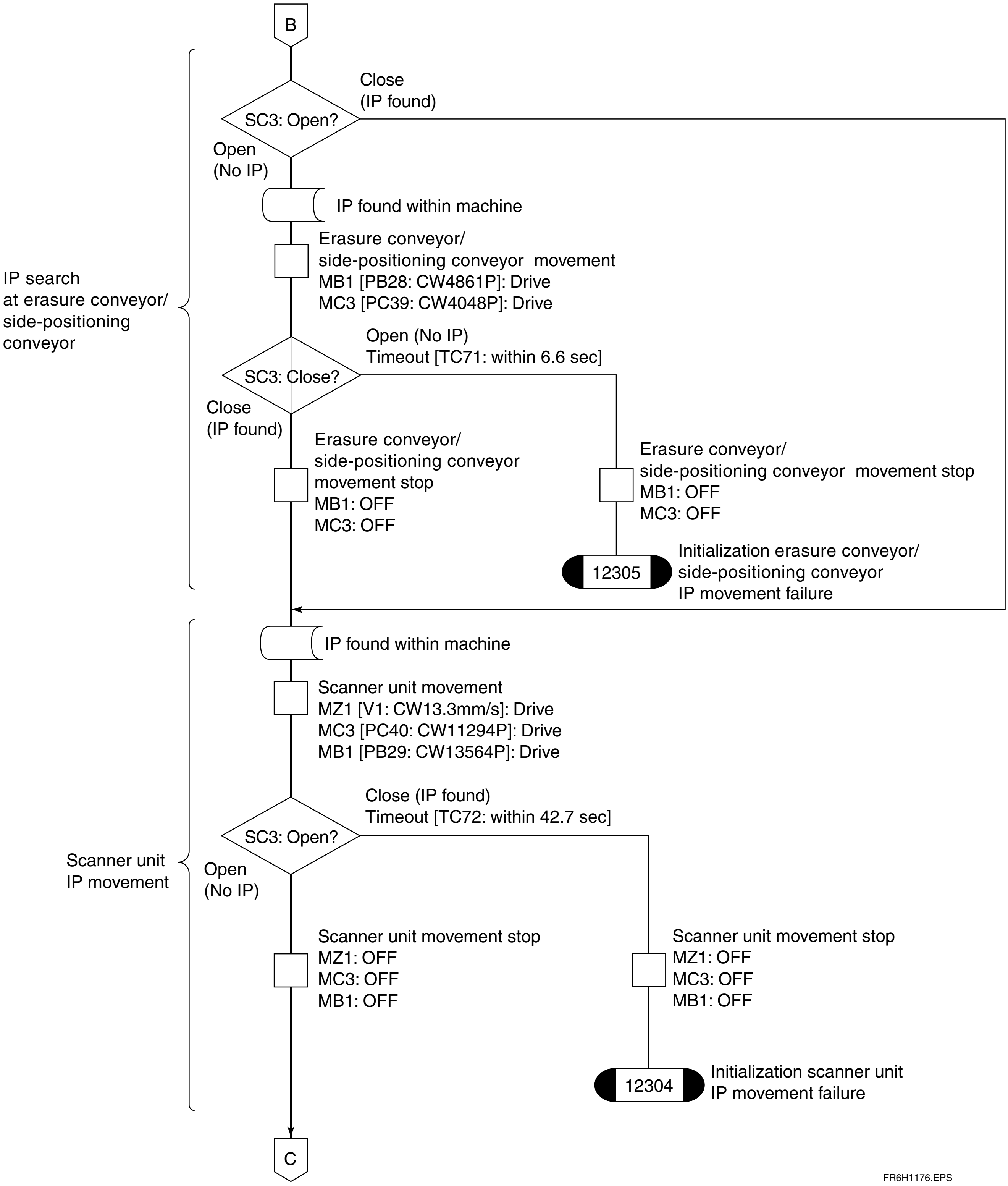
FR6H1270.EPS

## 5.1.6 IP Search

## <Fig. 1 IP Search Flow>

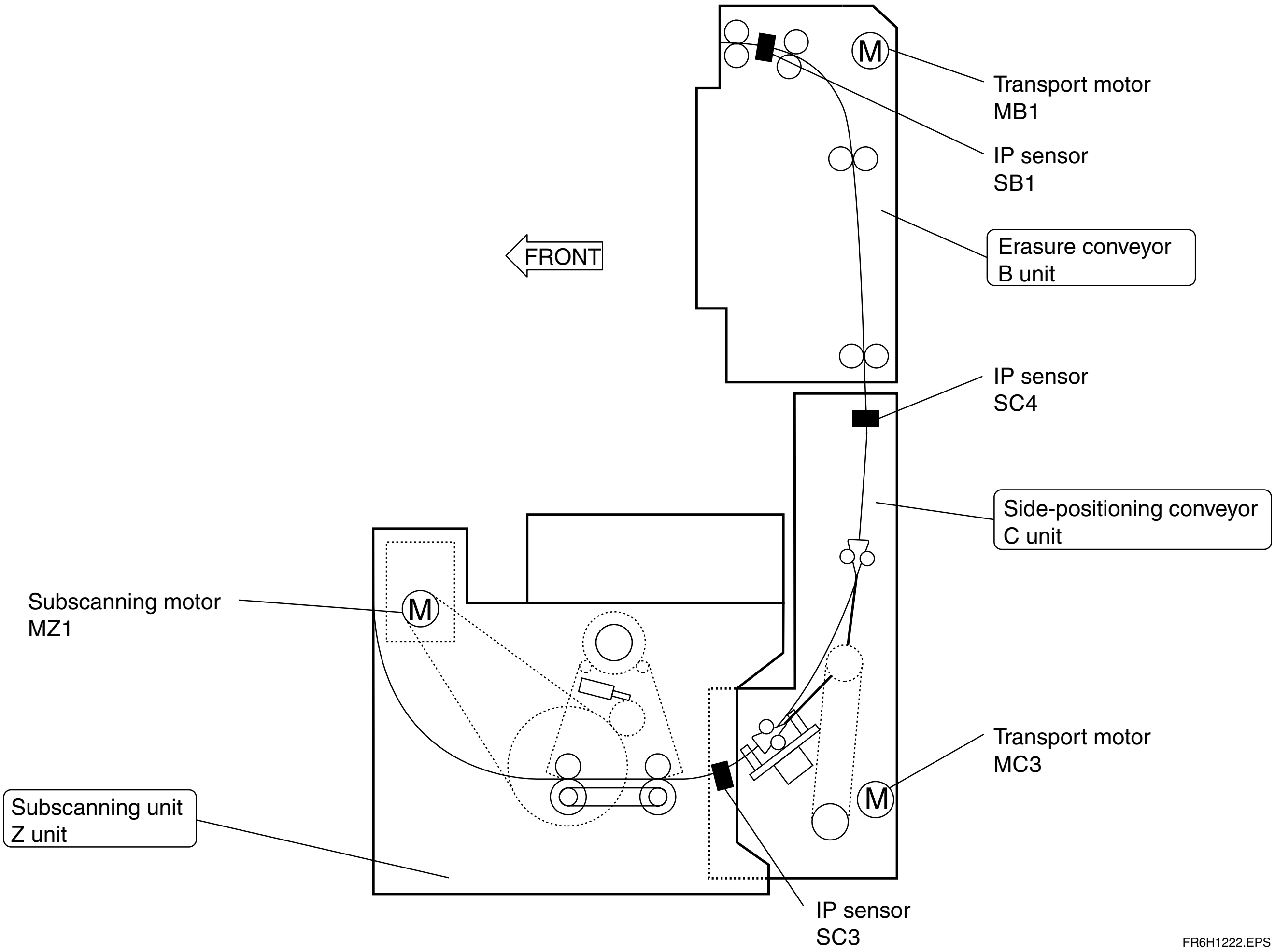

START
SB1: Open?
SC4: Open?
SB1: Close
SC4: Close
(IP found by both sensors)
10300
IP sensor logical inconsistency SB1
10300
IP sensor logical inconsistency SC4
SB1 and SC4: Open (No IP)
SB1 or SC4: Open
(IP found by either sensor)
SB1: Open?
SC3: Open?
SC4: Open?
SB1: Close
SC3: Close
SC4: Close (IP found by all sensors)
10300
IP sensor logical inconsistency SB1
10300
IP sensor logical inconsistency SC3
10300
IP sensor logical inconsistency SC4
SB1 and SC3 and SC4: Open (No IP)
SB1 or SC3 or SC4: Open
(IP found by either sensor)
SB1: Open?
SC3: Open?
SC4: Open?
SB1 and SC3 and SC4: Close
(IP found by all sensors)
SB1 or SC3 or SC4: Close
(IP found by either sensor)
B
SB1: Open
SC3: Open
SC4: Open
(No IP)
Erasure conveyor/ side-positioning conveyor search
MB1 [PB27: CW2077P]: Drive
SB1: Close
(IP found)
SB1: Close? or SC4: Close?
SB1: Open
SC4: Open
(No IP)
Timeout [TC81: within 4.6 sec]
SC4: Close
(IP found)
IP search at erasure conveyor/ side-positioning conveyor
CMOS info
"No IP" is rewritten to "IP found within machine"
Erasure conveyor/ side-positioning conveyor search stop
MB1: OFF
IP found within machine
Erasure conveyor/ side-positioning conveyor search stop
MB1: OFF
IP found within machine
Erasure conveyor/ side-positioning conveyor search stop
MB1: OFF
No IP within machine
A
FR6H1175.EPS


A
SB1 and SC3 and SC4: Close
(IP found by all sensors)
SB1 or SC3 or SC4: Close
(IP found by either sensor)
SB1: Open?
SC3: Open?
SC4: Open?
SB1: Open
SC3: Open
SC4: Open
(No IP)
B
Scanner unit search
MC3 [PC38: CW5000P]: Drive
MZ1 [V0: CCW212.8mm/s]: Drive
SC3: Open
SC4: Open
(No IP)
Timeout [TC82: within 7.4 sec]
SC3: Close?
or
SC4: Close?
Scanner unit
IP search
SC3: Close
SC4: Close
(IP found by
either sensor)
Scanner unit search stop
MC3: OFF
MZ1: OFF
Scanner unit search stop
MC3: OFF
MZ1: OFF
IP found within
machine
No IP within machine
SB1 and SC3 and SC4: Close
(IP found by all sensors)
SB1 or SC3 or SC4: Close
(IP found by either sensor)
SB1: Close?
SC3: Close?
SC4: Close?
SB1: Open
SC3: Open
SC4: Open
(No IP)
B
C
END
FR6H1177.EPS


B
SC3: Open?
Close
(IP found)
Open
(No IP)
IP found within machine
Erasure conveyor/
side-positioning conveyor movement
MB1 [PB28: CW4861P]: Drive
MC3 [PC39: CW4048P]: Drive
IP search
at erasure conveyor/
side-positioning
conveyor
SC3: Close?
Open (No IP)
Timeout [TC71: within 6.6 sec]
Close
(IP found)
Erasure conveyor/
side-positioning conveyor
movement stop
MB1: OFF
MC3: OFF
Erasure conveyor/
side-positioning conveyor movement stop
MB1: OFF
MC3: OFF
12305
Initialization erasure conveyor/
side-positioning conveyor
IP movement failure
IP found within machine
Scanner unit movement
MZ1 [V1: CW13.3mm/s]: Drive
MC3 [PC40: CW11294P]: Drive
MB1 [PB29: CW13564P]: Drive
SC3: Open?
Close (IP found)
Timeout [TC72: within 42.7 sec]
Open
(No IP)
Scanner unit
IP movement
Scanner unit movement stop
MZ1: OFF
MC3: OFF
MB1: OFF
Scanner unit movement stop
MZ1: OFF
MC3: OFF
MB1: OFF
12304
Initialization scanner unit
IP movement failure
C

FR6H1176.EPS

## <I/O Locations>


Transport motor
MB1
IP sensor
SB1
Erasure conveyor
B unit
FRONT
IP sensor
SC4
Side-positioning conveyor
C unit
Subscanning motor
MZ1
Transport motor
MC3
Subscanning unit
Z unit
IP sensor
SC3
M
M
M
FR6H1222.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SB1 | Cassette inlet IP sensor | PI (19mm) | Detects the presence of an IP. |
| SC3 | Side-positioning IP sensor | PI (19mm) | Detects the IP. |
| SC4 | Erasure positioning IP sensor | PI (19mm) | Detects the IP. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| MZ1 | Subscanning motor | FFM | Conveys the IP. |

TR6H1081.EPS

## <Sensor ON/OFF Status>

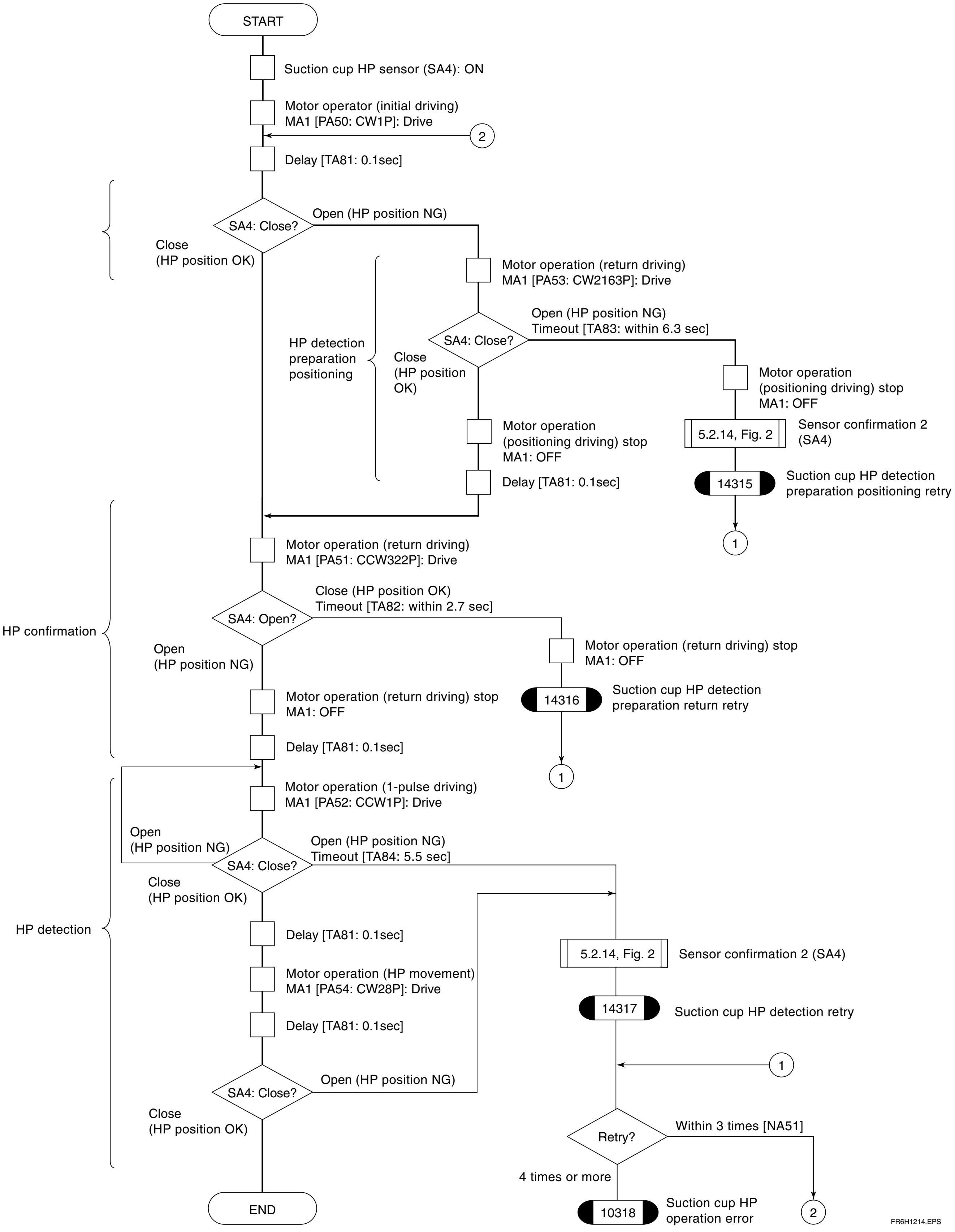
SB1/SC3/SC4

OFF: Open (no IP) ON: Close (IP found)

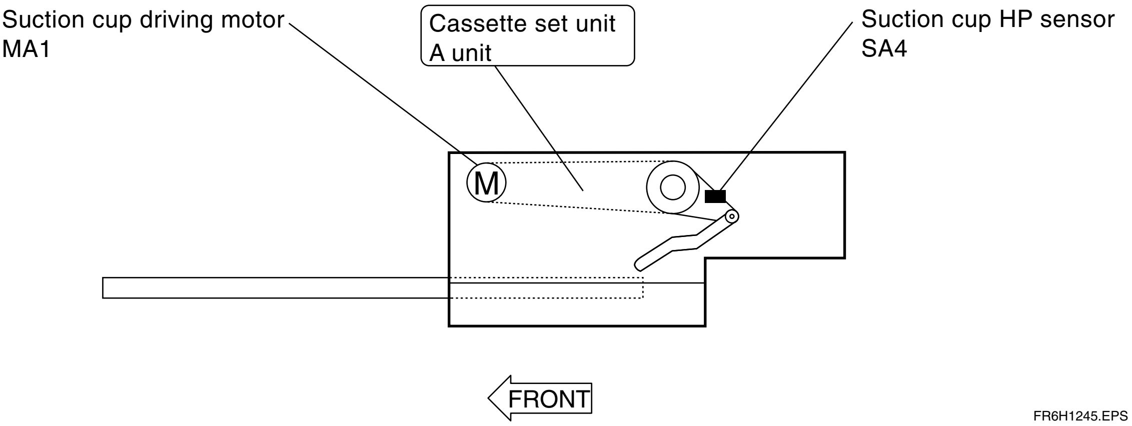
FR6H1250.EPS

## 5.1.7 Suction Cup Home Positioning

## <Fig. 1 Suction Cup Home Positioning Flow>


START
Suction cup HP sensor (SA4): ON
Motor operator (initial driving)
MA1 [PA50: CW1P]: Drive
2
Delay [TA81: 0.1sec]
SA4: Close?
Open (HP position NG)
Close
(HP position OK)
Motor operation (return driving)
MA1 [PA53: CW2163P]: Drive
HP detection
preparation
positioning
SA4: Close?
Open (HP position NG)
Timeout [TA83: within 6.3 sec]
Close
(HP position
OK)
Motor operation
(positioning driving) stop
MA1: OFF
5.2.14, Fig. 2
Sensor confirmation 2
(SA4)
Motor operation
(positioning driving) stop
MA1: OFF
Delay [TA81: 0.1sec]
14315
Suction cup HP detection
preparation positioning retry
1
Motor operation (return driving)
MA1 [PA51: CCW322P]: Drive
HP confirmation
SA4: Open?
Close (HP position OK)
Timeout [TA82: within 2.7 sec]
Open
(HP position NG)
Motor operation (return driving) stop
MA1: OFF
Motor operation (return driving) stop
MA1: OFF
14316
Suction cup HP detection
preparation return retry
Delay [TA81: 0.1sec]
1
Motor operation (1-pulse driving)
MA1 [PA52: CCW1P]: Drive
Open
(HP position NG)
SA4: Close?
Open (HP position NG)
Timeout [TA84: 5.5 sec]
Close
(HP position OK)
HP detection
Delay [TA81: 0.1sec]
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
Motor operation (HP movement)
MA1 [PA54: CW28P]: Drive
14317
Suction cup HP detection retry
Delay [TA81: 0.1sec]
1
SA4: Close?
Open (HP position NG)
Close
(HP position OK)
Retry?
Within 3 times [NA51]
4 times or more
END
10318
Suction cup HP
operation error
2
FR6H1214.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Suction cup HP sensor
SA4
M
FRONT
FR6H1245.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |

TR6H1093.EPS

## <Sensor ON/OFF Status>

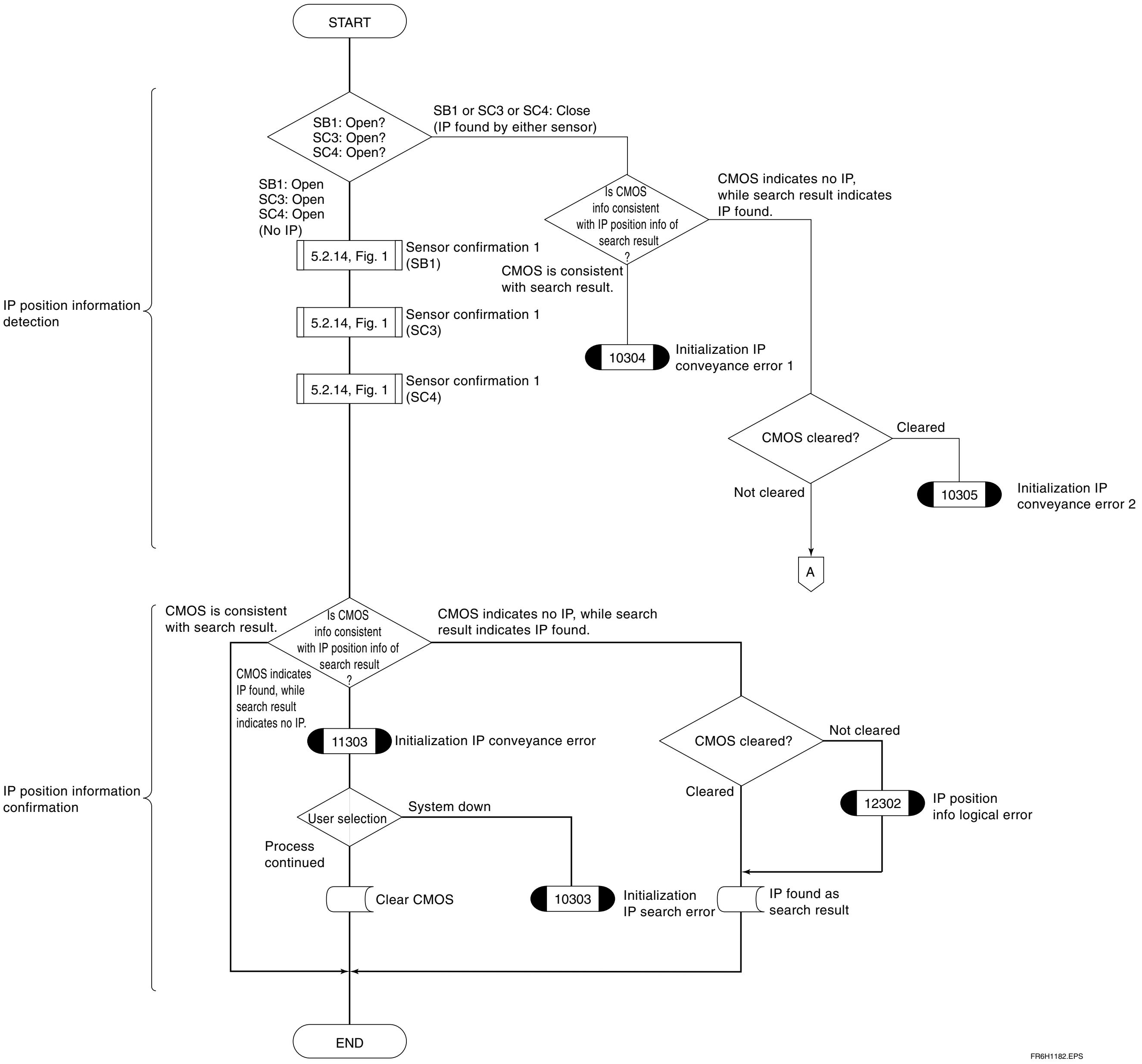
SA1

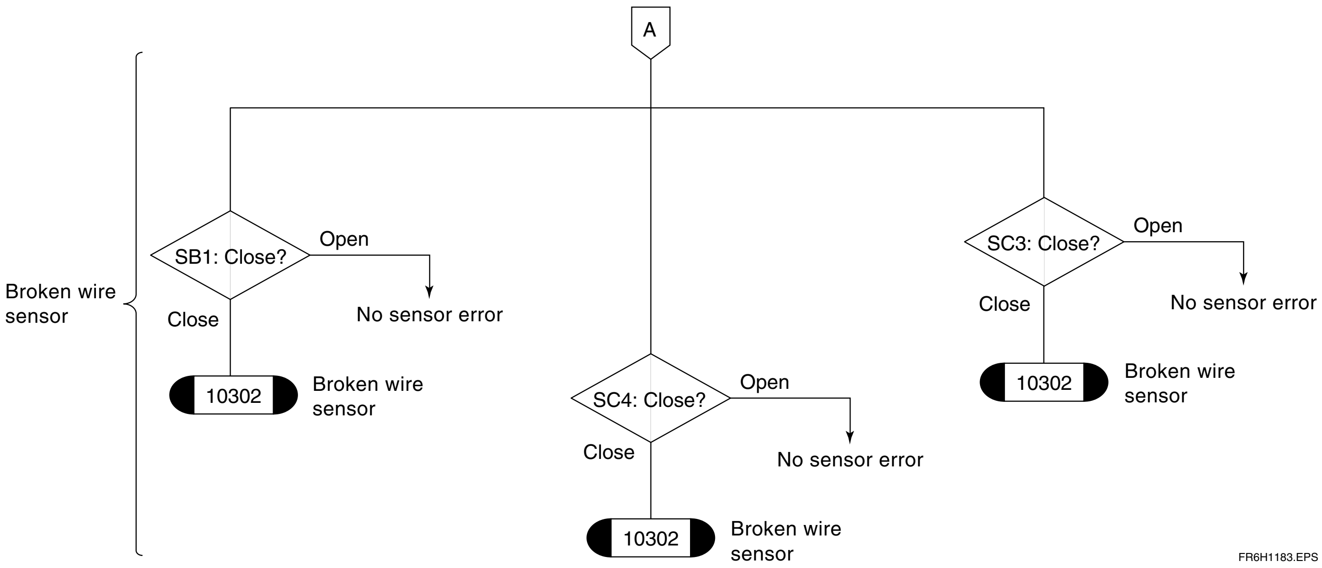
OFF: Open (not blocked)    ON: Close (blocked)

FR6H1271.EPS

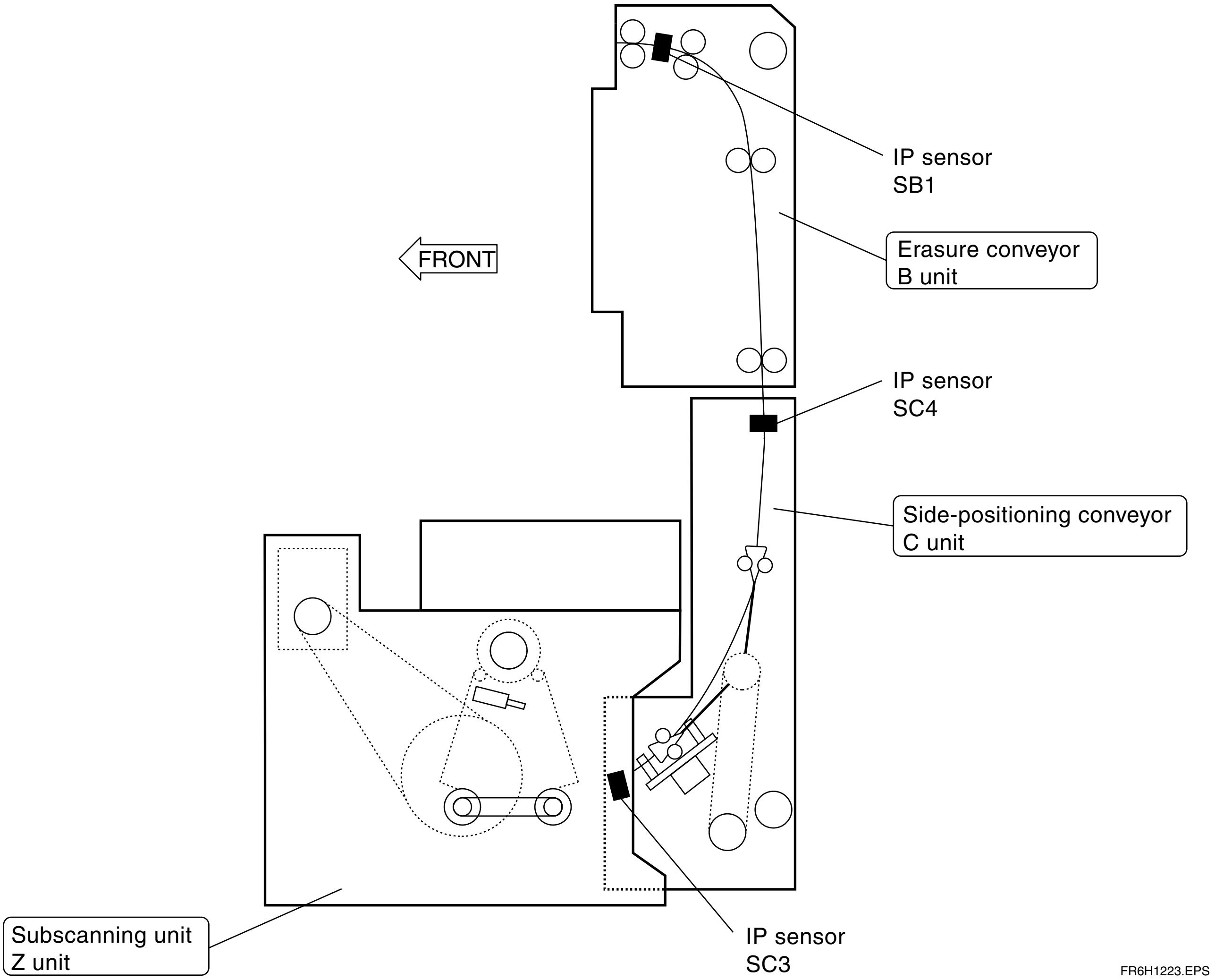
## 5.1.8 IP Position Information Confirmation

## <Fig. 1 IP Position Information Confirmation Flow>


START
SB1: Open?
SC3: Open?
SC4: Open?
SB1 or SC3 or SC4: Close
(IP found by either sensor)
SB1: Open
SC3: Open
SC4: Open
(No IP)
Is CMOS info consistent with IP position info of search result ?
CMOS indicates no IP, while search result indicates IP found.
5.2.14, Fig. 1
Sensor confirmation 1 (SB1)
CMOS is consistent with search result.
IP position information detection
5.2.14, Fig. 1
Sensor confirmation 1 (SC3)
10304
Initialization IP conveyance error 1
5.2.14, Fig. 1
Sensor confirmation 1 (SC4)
CMOS cleared?
Cleared
Not cleared
10305
Initialization IP conveyance error 2
A
CMOS is consistent with search result.
Is CMOS info consistent with IP position info of search result ?
CMOS indicates no IP, while search result indicates IP found.
CMOS indicates IP found, while search result indicates no IP.
11303
Initialization IP conveyance error
CMOS cleared?
Not cleared
IP position information confirmation
Cleared
12302
IP position info logical error
User selection
System down
Process continued
Clear CMOS
10303
Initialization IP search error
IP found as search result
END
FR6H1182.EPS


A
Broken wire
sensor
SB1: Close?
Open
No sensor error
Close
10302
Broken wire
sensor
SC4: Close?
Open
No sensor error
Close
10302
Broken wire
sensor
SC3: Close?
Open
No sensor error
Close
10302
Broken wire
sensor
FR6H1183.EPS

## <I/O Locations>


IP sensor
SB1
Erasure conveyor
B unit
FRONT
IP sensor
SC4
Side-positioning conveyor
C unit
Subscanning unit
Z unit
IP sensor
SC3
FR6H1223.EPS

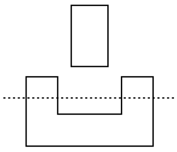
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SB1 | Cassette inlet IP sensor | PI (19mm) | Detects the presence of an IP. |
| SC3 | Side-positioning IP sensor | PI (19mm) | Detects the IP. |
| SC4 | Erasure positioning IP sensor | PI (19mm) | Detects the IP. |

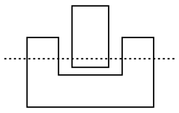
TR6H1077.EPS

## <Sensor ON/OFF Status>

SB1/SC3/SC4



OFF: Open (no IP)



ON: Close (IP found)

FR6H1251.EPS

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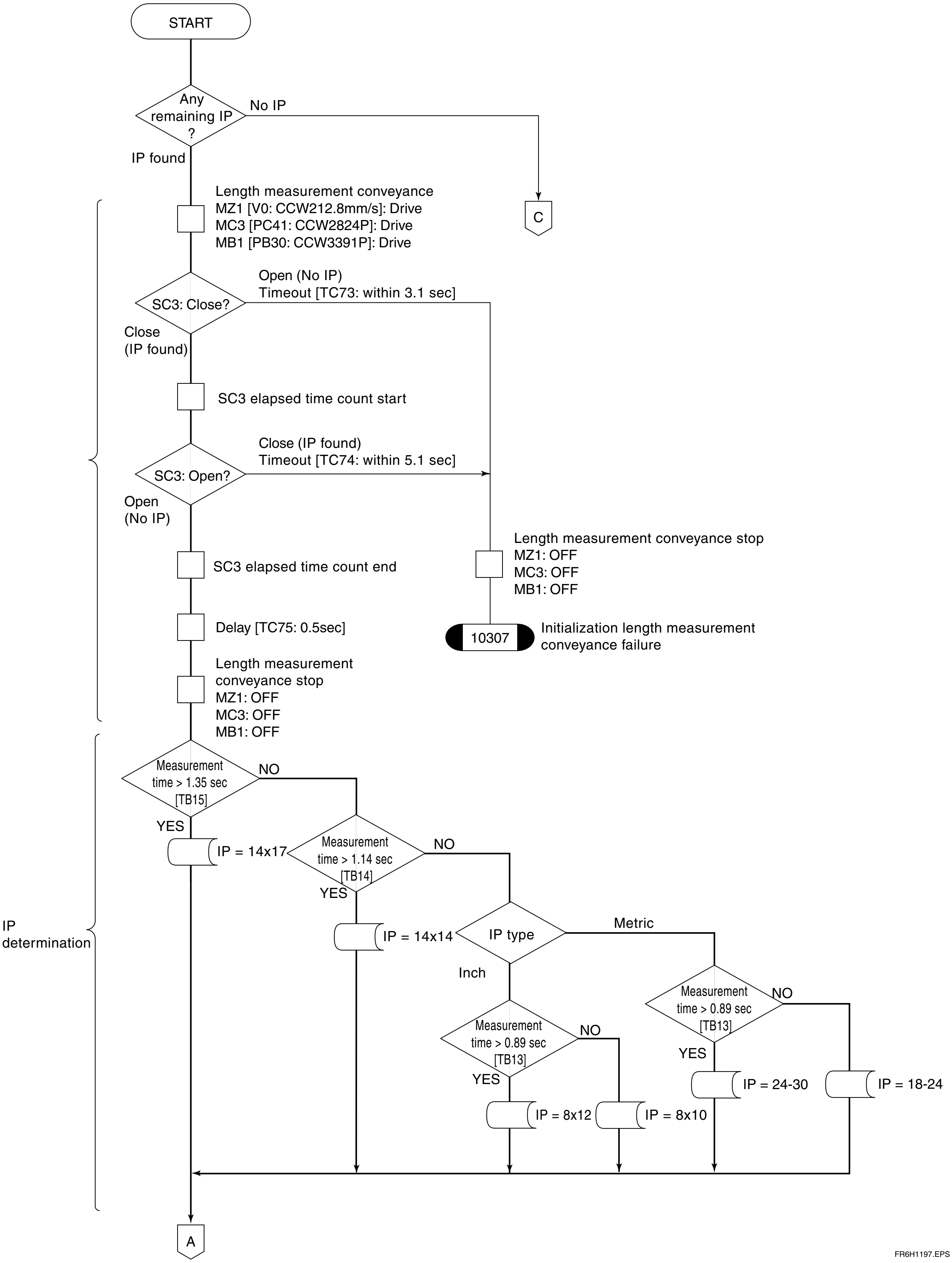
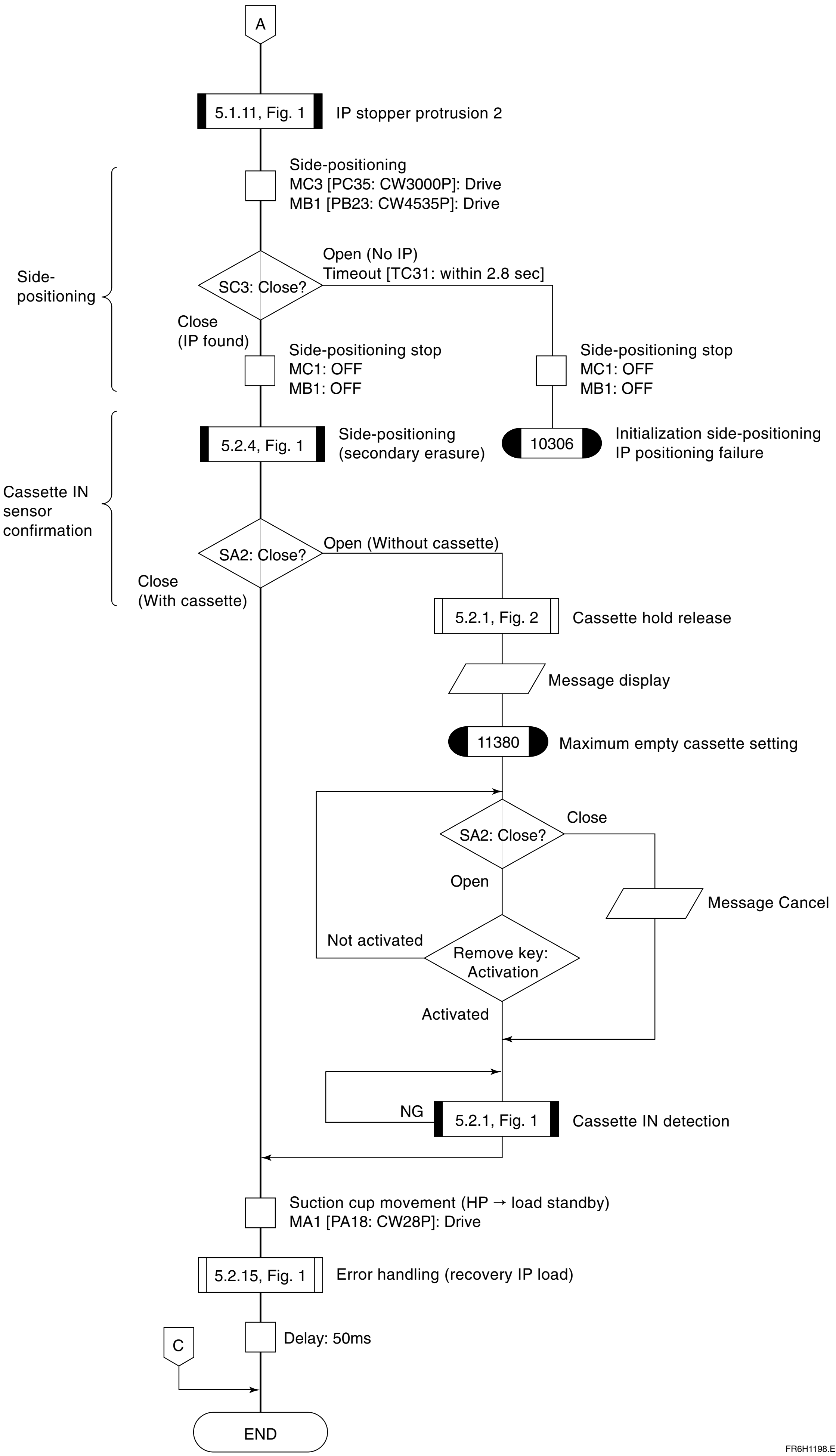
## 5.1.9 Remaining IP Processing

## <Fig. 1 Remaining IP Processing Flow>

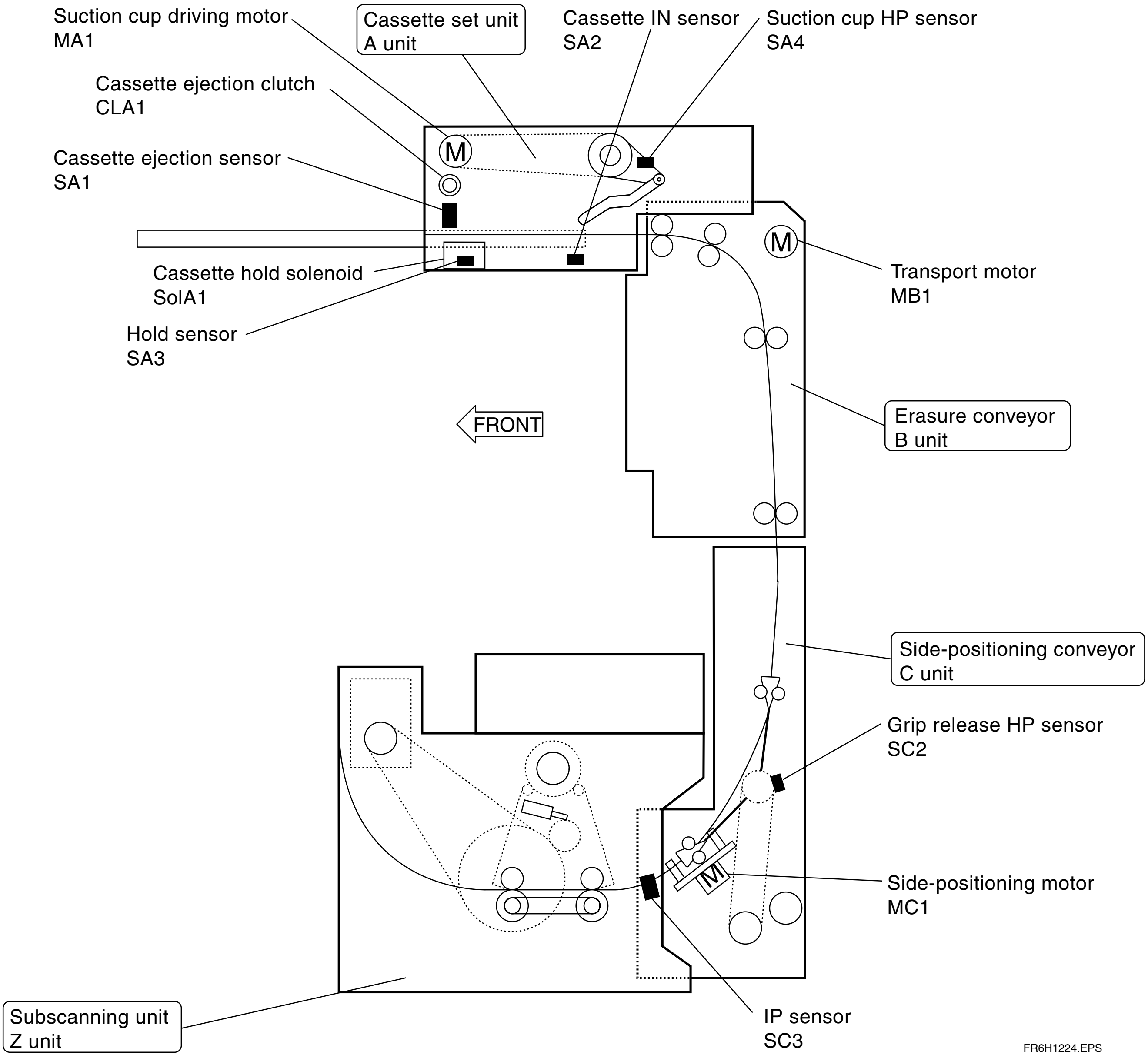

START
Any remaining IP ?
No IP
IP found
Length measurement conveyance
MZ1 [V0: CCW212.8mm/s]: Drive
MC3 [PC41: CCW2824P]: Drive
MB1 [PB30: CCW3391P]: Drive
C
SC3: Close?
Open (No IP)
Timeout [TC73: within 3.1 sec]
Close
(IP found)
SC3 elapsed time count start
SC3: Open?
Close (IP found)
Timeout [TC74: within 5.1 sec]
Open
(No IP)
SC3 elapsed time count end
Length measurement conveyance stop
MZ1: OFF
MC3: OFF
MB1: OFF
Delay [TC75: 0.5sec]
10307
Initialization length measurement conveyance failure
Length measurement conveyance stop
MZ1: OFF
MC3: OFF
MB1: OFF
Measurement time > 1.35 sec [TB15]
NO
YES
IP = 14x17
Measurement time > 1.14 sec [TB14]
NO
YES
IP = 14x14
IP type
Metric
Inch
Measurement time > 0.89 sec [TB13]
NO
YES
IP = 24-30
IP = 18-24
Measurement time > 0.89 sec [TB13]
NO
YES
IP = 8x12
IP = 8x10
IP determination
A

FR6H1197.EPS


A
5.1.11, Fig. 1
IP stopper protrusion 2
Side-positioning
MC3 [PC35: CW3000P]: Drive
MB1 [PB23: CW4535P]: Drive
Side-positioning
SC3: Close?
Open (No IP)
Timeout [TC31: within 2.8 sec]
Close
(IP found)
Side-positioning stop
MC1: OFF
MB1: OFF
Side-positioning stop
MC1: OFF
MB1: OFF
5.2.4, Fig. 1
Side-positioning
(secondary erasure)
10306
Initialization side-positioning
IP positioning failure
Cassette IN sensor confirmation
SA2: Close?
Open (Without cassette)
Close
(With cassette)
5.2.1, Fig. 2
Cassette hold release
Message display
11380
Maximum empty cassette setting
SA2: Close?
Close
Open
Message Cancel
Not activated
Remove key: Activation
Activated
NG
5.2.1, Fig. 1
Cassette IN detection
Suction cup movement (HP → load standby)
MA1 [PA18: CW28P]: Drive
5.2.15, Fig. 1
Error handling (recovery IP load)
Delay: 50ms
C
END

FR6H1198.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Cassette IN sensor
SA2
Suction cup HP sensor
SA4
Cassette ejection clutch
CLA1
Cassette ejection sensor
SA1
M
M
Transport motor
MB1
Cassette hold solenoid
SolA1
Hold sensor
SA3
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Grip release HP sensor
SC2
Side-positioning motor
MC1
M
Subscanning unit
Z unit
IP sensor
SC3
FR6H1224.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA1 | Cassette ejection sensor | PI (5mm) | Detects that the cassette has been ejected. |
| SA2 | Cassette IN sensor | PI (5mm) | Detects that the cassette has been inserted. |
| SA3 | Cassette hold sensor | PI (5mm) | Detects the cassette hold completion. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SC3 | Side-positioning IP sensor | PI (19mm) | IP conveyance sensor |
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MC1 | Side-positioning motor | Pulse motor | Drives the side-positioning mechanism. |
| SolA1 | Cassette hold SOL | Power-down solenoid | Retreats the cassette hold pin when turned ON. |
| CLA1 | Cassette ejection clutch | Clutch | |

TR6H1087.EPS

## <Sensor ON/OFF Status>

SA1/SA3/SA4

OFF: Open (not blocked) ON: Close (blocked)

SA2

OFF: Open (without cassette) ON: Close (with cassette)

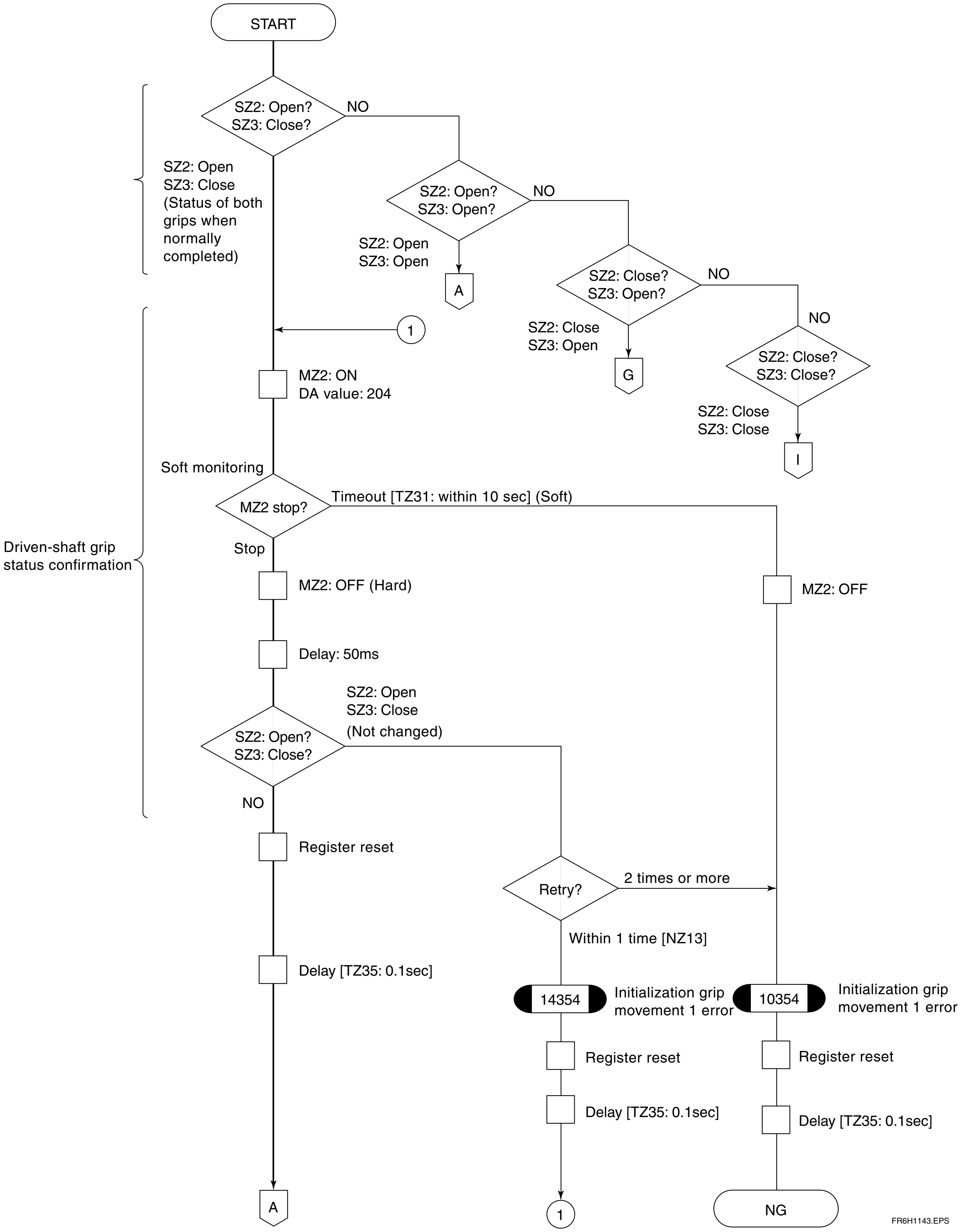
SC3

OFF: Open (no IP) ON: Close (IP found)

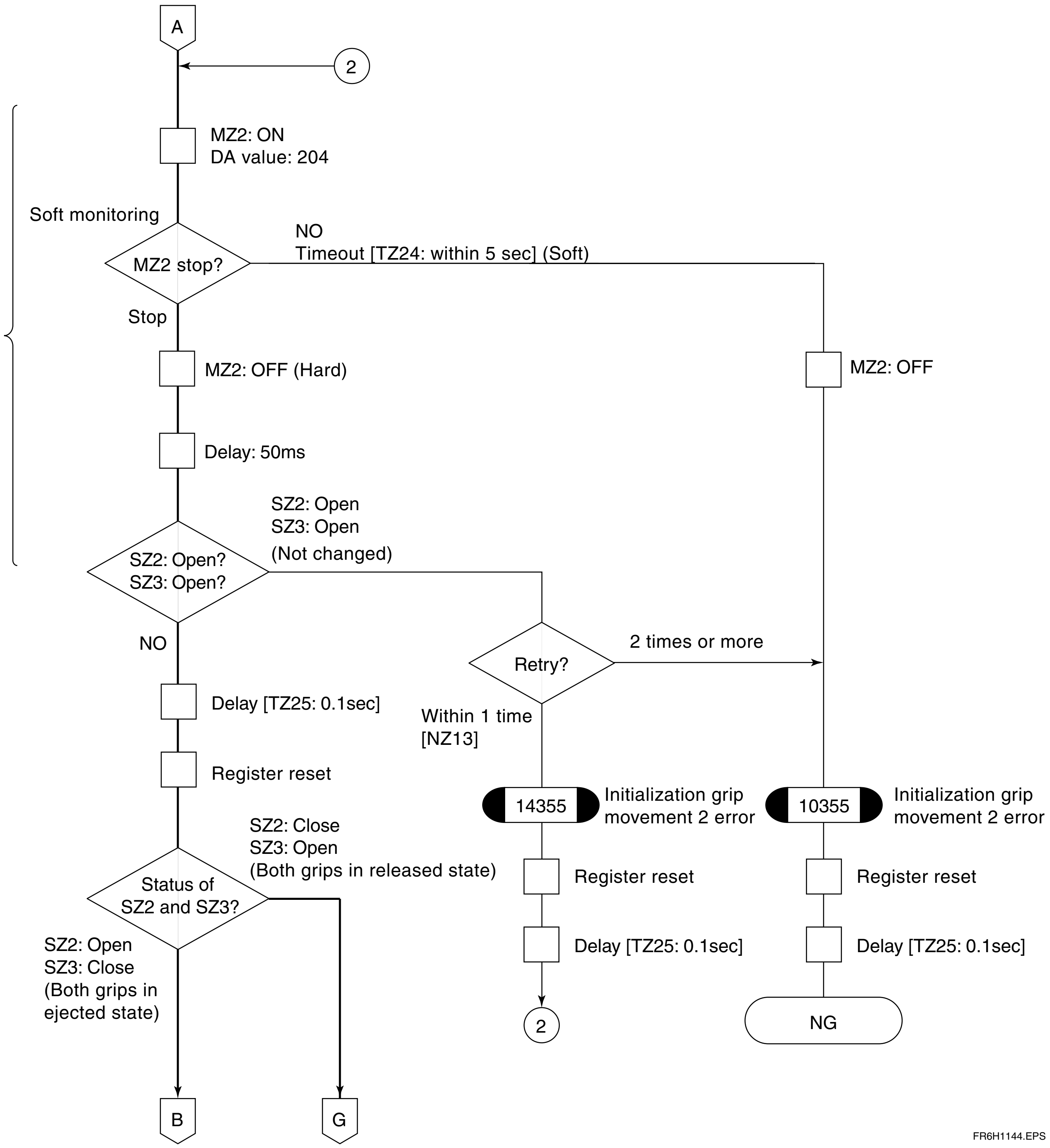
FR6H1252.EPS

## 5.1.10 Subscanning Grip Home Positioning

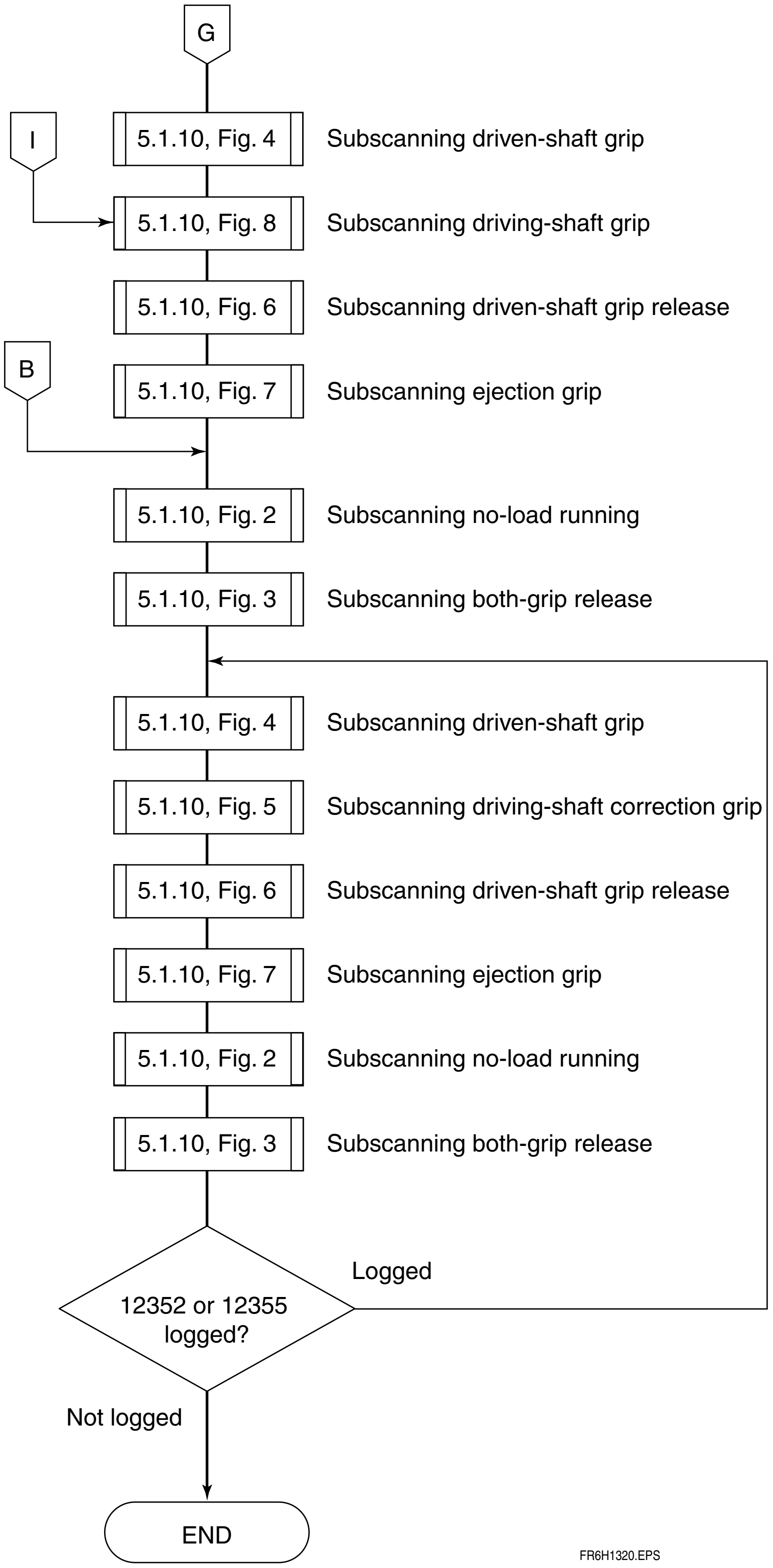
## <Fig. 1 Subscanning Grip Home Positioning Flow>


START
SZ2: Open?
SZ3: Close?
NO
SZ2: Open
SZ3: Close
(Status of both grips when normally completed)
SZ2: Open?
SZ3: Open?
NO
SZ2: Open
SZ3: Open
A
SZ2: Close?
SZ3: Open?
NO
SZ2: Close
SZ3: Open
G
NO
SZ2: Close?
SZ3: Close?
SZ2: Close
SZ3: Close
I
1
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
Timeout [TZ31: within 10 sec] (Soft)
Driven-shaft grip status confirmation
Stop
MZ2: OFF (Hard)
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Close
(Not changed)
SZ2: Open?
SZ3: Close?
NO
Register reset
Retry?
2 times or more
Within 1 time [NZ13]
Delay [TZ35: 0.1sec]
14354
Initialization grip movement 1 error
10354
Initialization grip movement 1 error
Register reset
Register reset
Delay [TZ35: 0.1sec]
Delay [TZ35: 0.1sec]
A
1
NG

FR6H1143.EPS

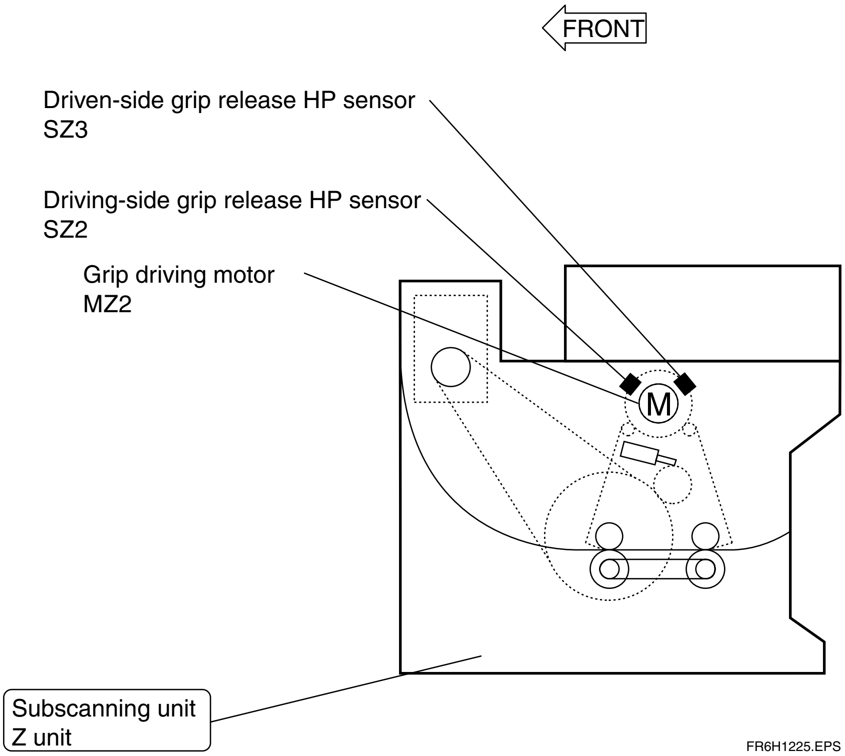

A
2
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
NO
Timeout [TZ24: within 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Open
(Not changed)
SZ2: Open?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Delay [TZ25: 0.1sec]
Register reset
14355
Initialization grip movement 2 error
10355
Initialization grip movement 2 error
SZ2: Close
SZ3: Open
(Both grips in released state)
Status of SZ2 and SZ3?
Register reset
Register reset
SZ2: Open
SZ3: Close
(Both grips in ejected state)
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
2
NG
B
G

FR6H1144.EPS


G
I
5.1.10, Fig. 4
Subscanning driven-shaft grip
5.1.10, Fig. 8
Subscanning driving-shaft grip
5.1.10, Fig. 6
Subscanning driven-shaft grip release
B
5.1.10, Fig. 7
Subscanning ejection grip
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
5.1.10, Fig. 4
Subscanning driven-shaft grip
5.1.10, Fig. 5
Subscanning driving-shaft correction grip
5.1.10, Fig. 6
Subscanning driven-shaft grip release
5.1.10, Fig. 7
Subscanning ejection grip
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
12352 or 12355 logged?
Logged
Not logged
END

FR6H1320.EPS

## <I/O Locations>


FRONT
Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
M
Subscanning unit
Z unit

FR6H1225.EPS

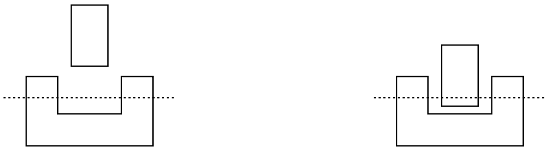
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |

TR6H1074.EPS

## <Sensor ON/OFF Status>

SC3/SB1

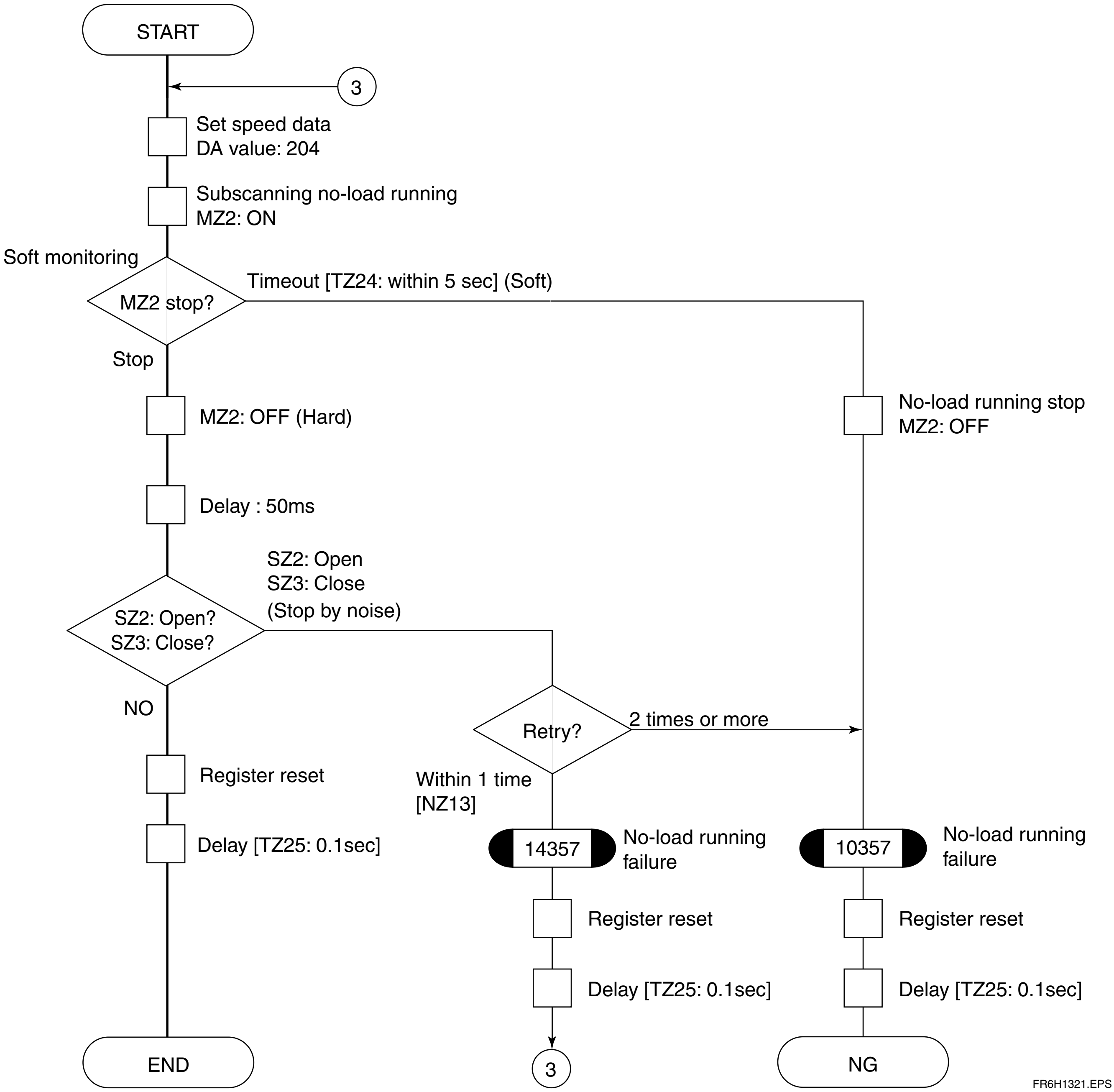


OFF: Open (no IP)

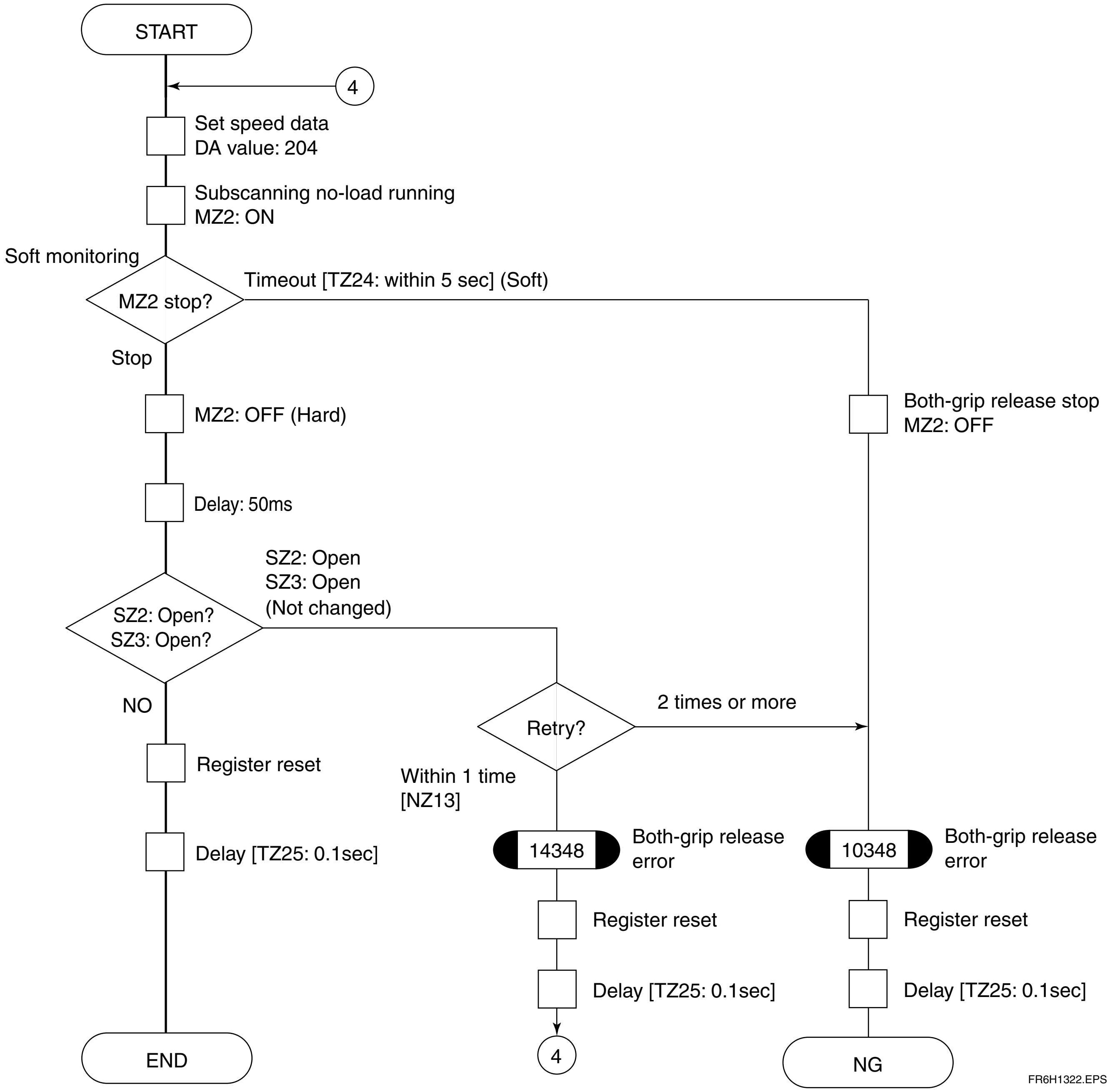
ON: Close (IP found)

FR6H1255.EPS

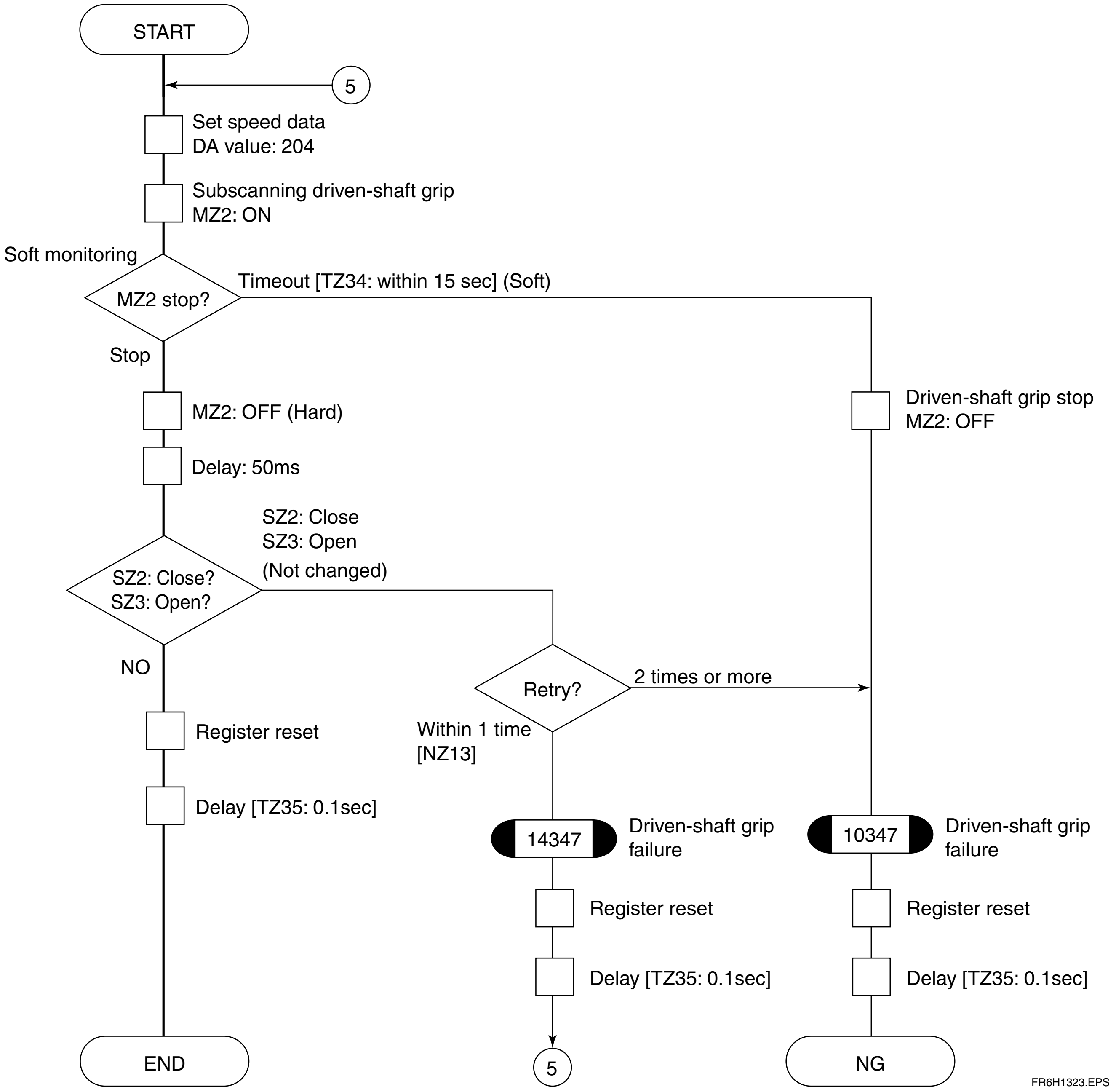
## <Fig. 2 Subscanning No-Load Running Flow>


START
3
Set speed data
DA value: 204
Subscanning no-load running
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ24: within 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
No-load running stop
MZ2: OFF
Delay : 50ms
SZ2: Open
SZ3: Close
(Stop by noise)
SZ2: Open?
SZ3: Close?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
Delay [TZ25: 0.1sec]
14357
No-load running
failure
10357
No-load running
failure
Register reset
Delay [TZ25: 0.1sec]
Register reset
Delay [TZ25: 0.1sec]
END
3
NG
FR6H1321.EPS

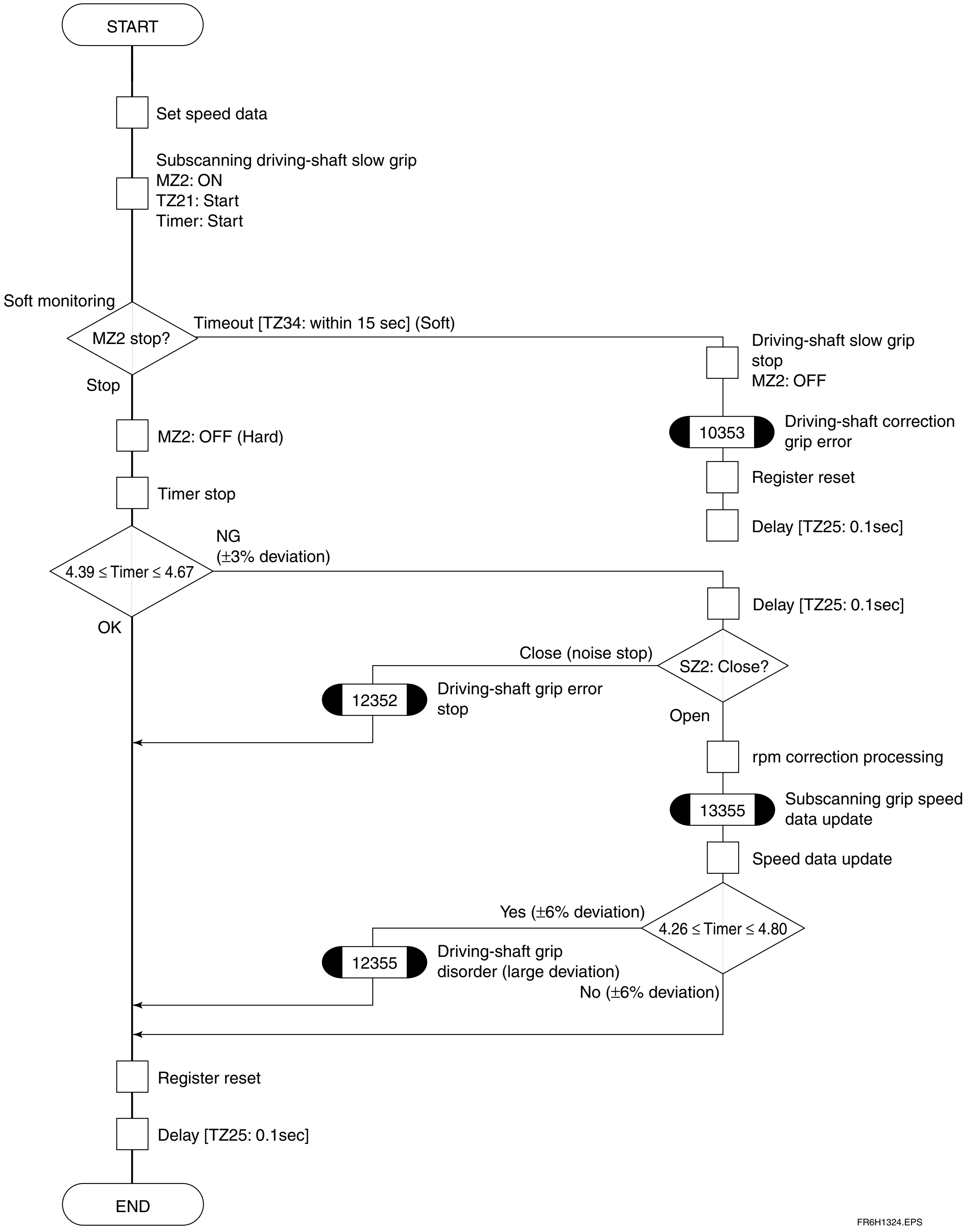
## <Fig. 3 Subscanning Both-Grip Release Flow>


START
4
Set speed data
DA value: 204
Subscanning no-load running
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ24: within 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
Both-grip release stop
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Open
(Not changed)
SZ2: Open?
SZ3: Open?
NO
Retry?
2 times or more
Register reset
Within 1 time
[NZ13]
Delay [TZ25: 0.1sec]
14348
Both-grip release error
10348
Both-grip release error
Register reset
Register reset
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
END
4
NG
FR6H1322.EPS

## <Fig. 4 Subscanning Driven-Shaft Grip Flow>

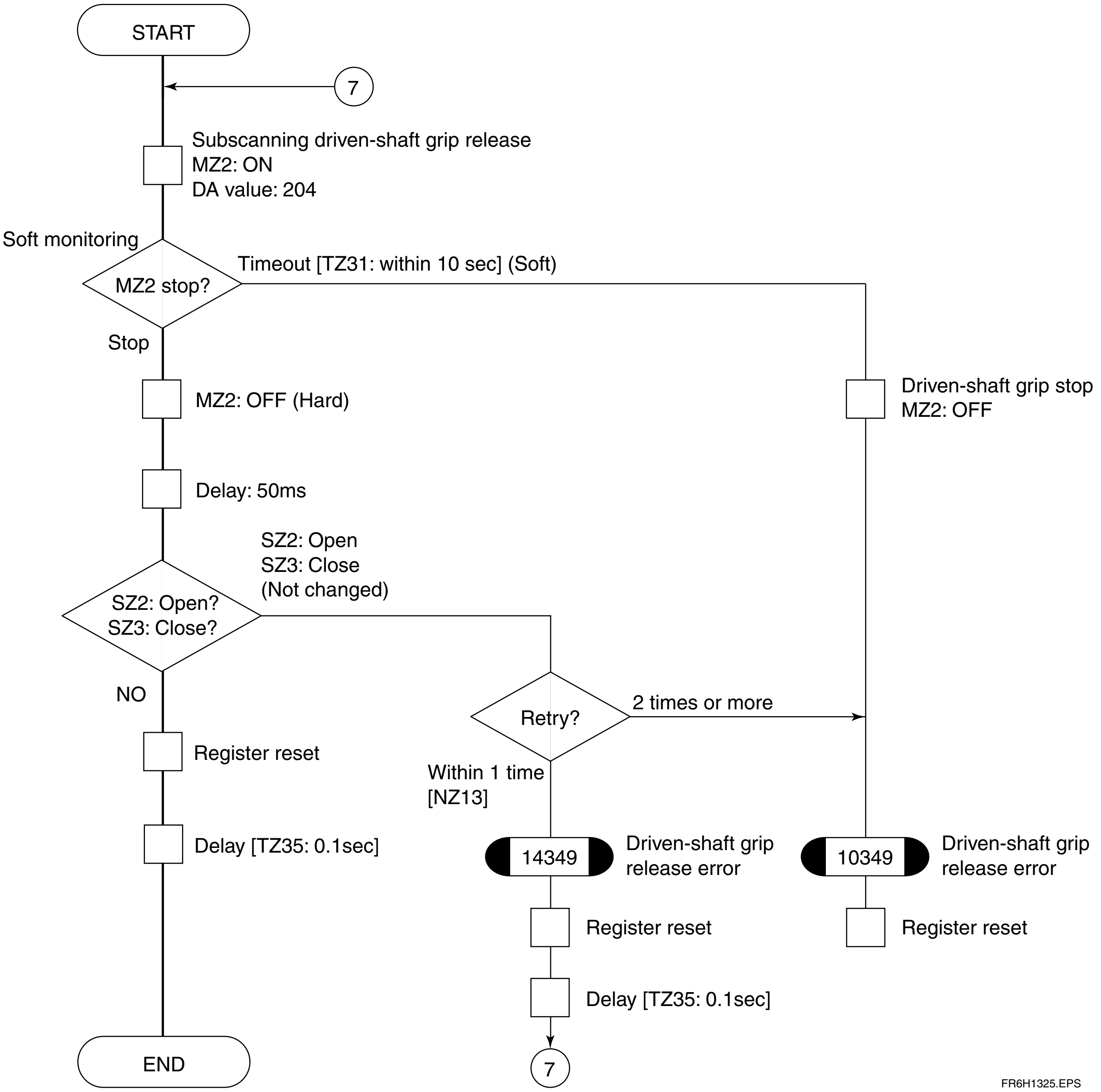

START
5
Set speed data
DA value: 204
Subscanning driven-shaft grip
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Stop
MZ2: OFF (Hard)
Delay: 50ms
Driven-shaft grip stop
MZ2: OFF
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
Delay [TZ35: 0.1sec]
14347
Driven-shaft grip failure
10347
Driven-shaft grip failure
Register reset
Delay [TZ35: 0.1sec]
Register reset
Delay [TZ35: 0.1sec]
END
5
NG
FR6H1323.EPS

## <Fig. 5 Subscanning Driving-Shaft Correction Grip Flow>

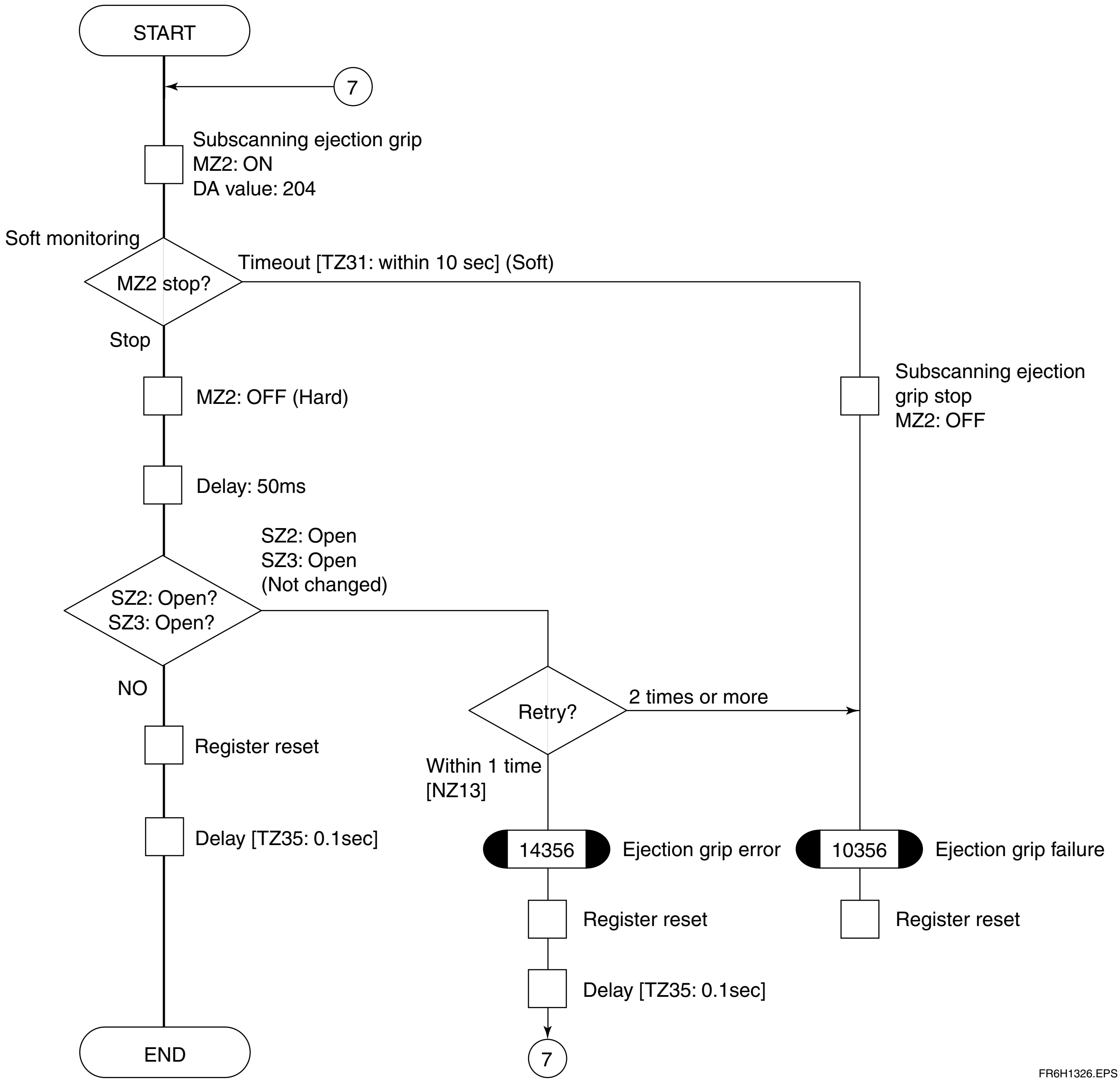

START
Set speed data
Subscanning driving-shaft slow grip
MZ2: ON
TZ21: Start
Timer: Start
Soft monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Driving-shaft slow grip stop
MZ2: OFF
10353
Driving-shaft correction grip error
Register reset
Delay [TZ25: 0.1sec]
Stop
MZ2: OFF (Hard)
Timer stop
4.39 ≤ Timer ≤ 4.67
NG (±3% deviation)
Delay [TZ25: 0.1sec]
OK
SZ2: Close?
Close (noise stop)
12352
Driving-shaft grip error stop
Open
rpm correction processing
13355
Subscanning grip speed data update
Speed data update
4.26 ≤ Timer ≤ 4.80
Yes (±6% deviation)
12355
Driving-shaft grip disorder (large deviation)
No (±6% deviation)
Register reset
Delay [TZ25: 0.1sec]
END

FR6H1324.EPS

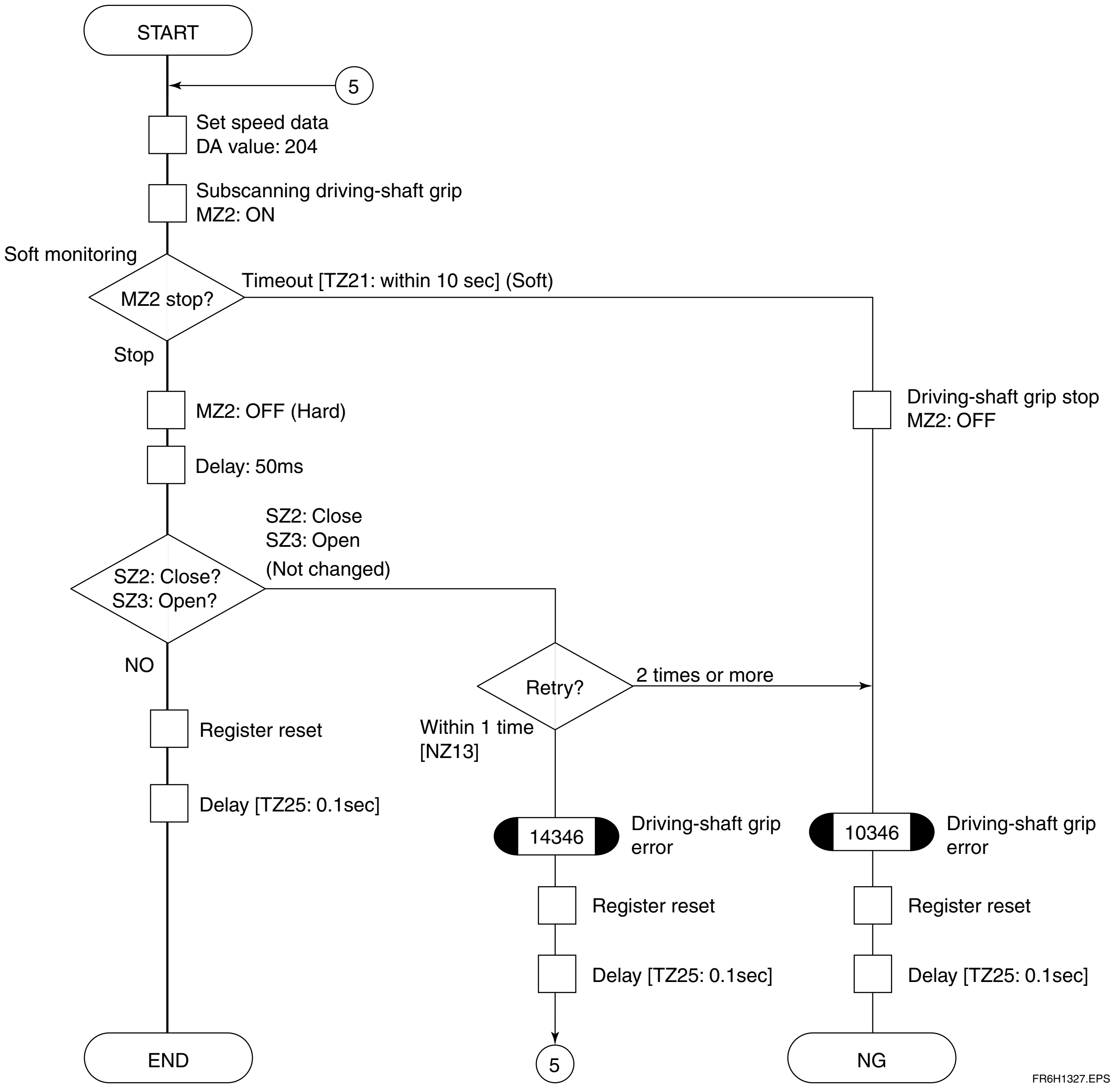
## <Fig. 6 Subscanning Driven-Shaft Grip Release Flow>


START
7
Subscanning driven-shaft grip release
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
Timeout [TZ31: within 10 sec] (Soft)
Stop
MZ2: OFF (Hard)
Driven-shaft grip stop
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Close
(Not changed)
SZ2: Open?
SZ3: Close?
NO
Retry?
2 times or more
Register reset
Within 1 time
[NZ13]
Delay [TZ35: 0.1sec]
14349
Driven-shaft grip release error
10349
Driven-shaft grip release error
Register reset
Register reset
Delay [TZ35: 0.1sec]
END
7
FR6H1325.EPS

## <Fig. 7 Subscanning Ejection Grip Flow>


START
7
Subscanning ejection grip
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
Timeout [TZ31: within 10 sec] (Soft)
Stop
MZ2: OFF (Hard)
Subscanning ejection
grip stop
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Open
(Not changed)
SZ2: Open?
SZ3: Open?
NO
Retry?
2 times or more
Register reset
Within 1 time
[NZ13]
Delay [TZ35: 0.1sec]
14356
Ejection grip error
10356
Ejection grip failure
Register reset
Register reset
Delay [TZ35: 0.1sec]
END
7
FR6H1326.EPS

## <Fig. 8 Subscanning Driving-Shaft Grip Flow>


START
5
Set speed data
DA value: 204
Subscanning driving-shaft grip
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ21: within 10 sec] (Soft)
Stop
MZ2: OFF (Hard)
Delay: 50ms
Driving-shaft grip stop
MZ2: OFF
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
Delay [TZ25: 0.1sec]
14346
Driving-shaft grip error
10346
Driving-shaft grip error
Register reset
Delay [TZ25: 0.1sec]
Register reset
Delay [TZ25: 0.1sec]
END
5
NG
FR6H1327.EPS

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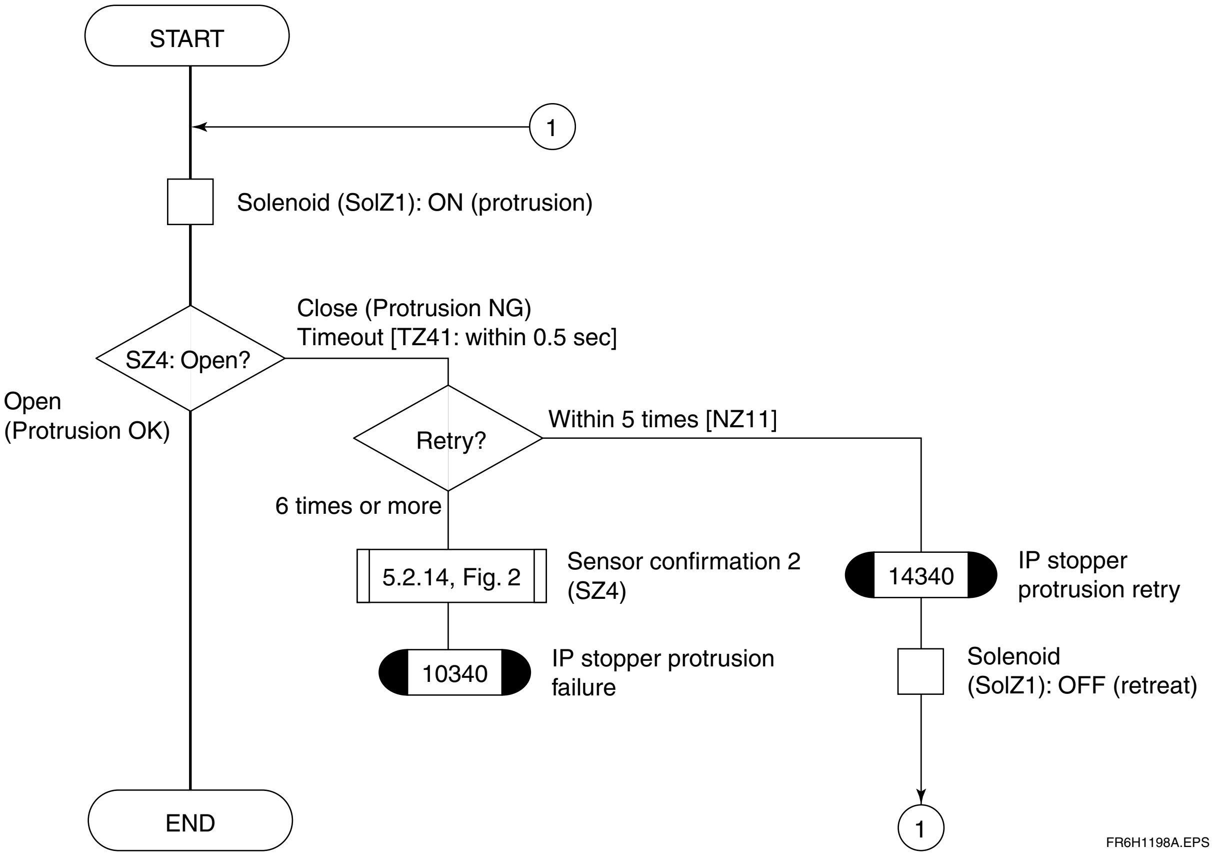
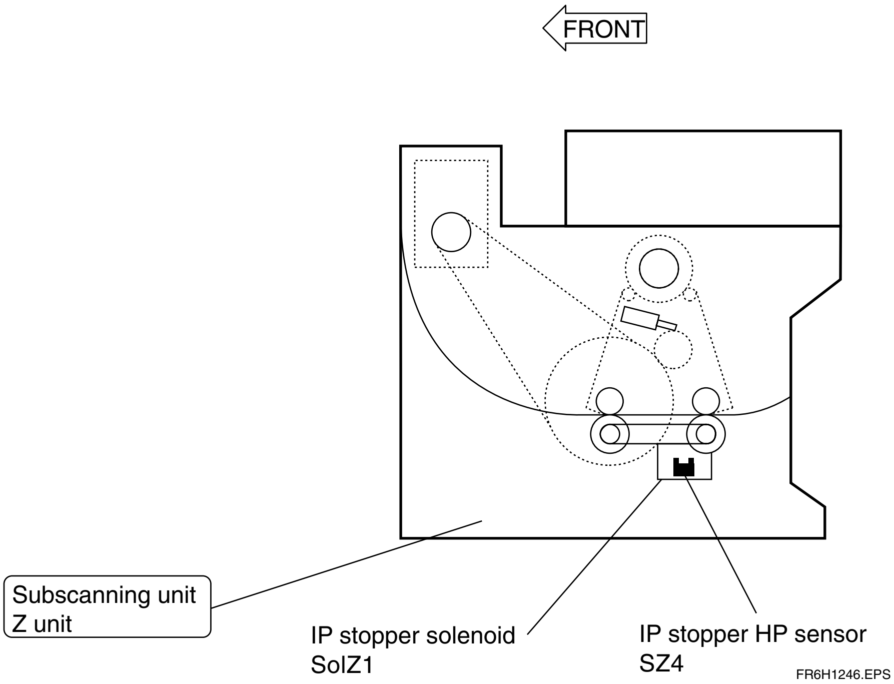
## 5.1.11 IP Stopper Protrusion 2

## <Fig. 1 IP Stopper Protrusion 2 Flow>


START
1
Solenoid (SolZ1): ON (protrusion)
SZ4: Open?
Close (Protrusion NG)
Timeout [TZ41: within 0.5 sec]
Open
(Protrusion OK)
Retry?
Within 5 times [NZ11]
6 times or more
5.2.14, Fig. 2
Sensor confirmation 2
(SZ4)
14340
IP stopper
protrusion retry
10340
IP stopper protrusion
failure
Solenoid
(SolZ1): OFF (retreat)
END
1
FR6H1198A.EPS

## <I/O Locations>


FRONT
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4

FR6H1246.EPS

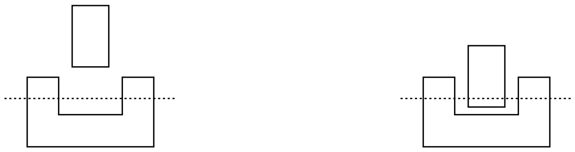
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |

TR6H1072.EPS

## <Sensor ON/OFF Status>

SZ4



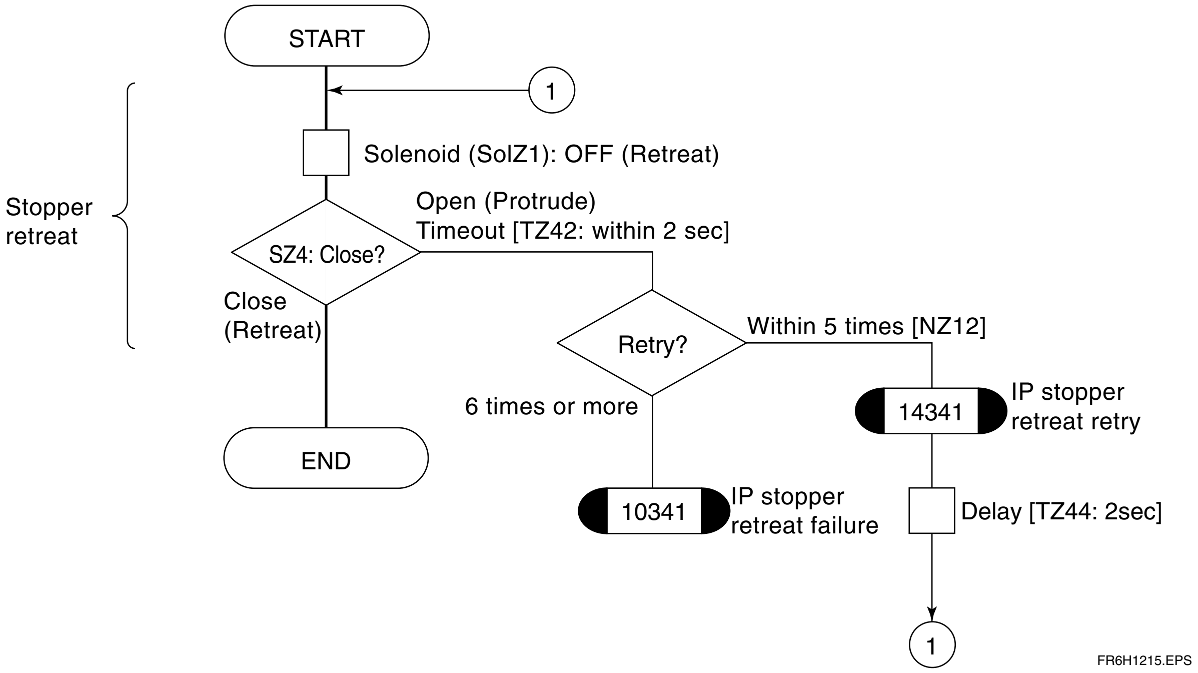
OFF: Open (not blocked)

ON: Close (blocked)

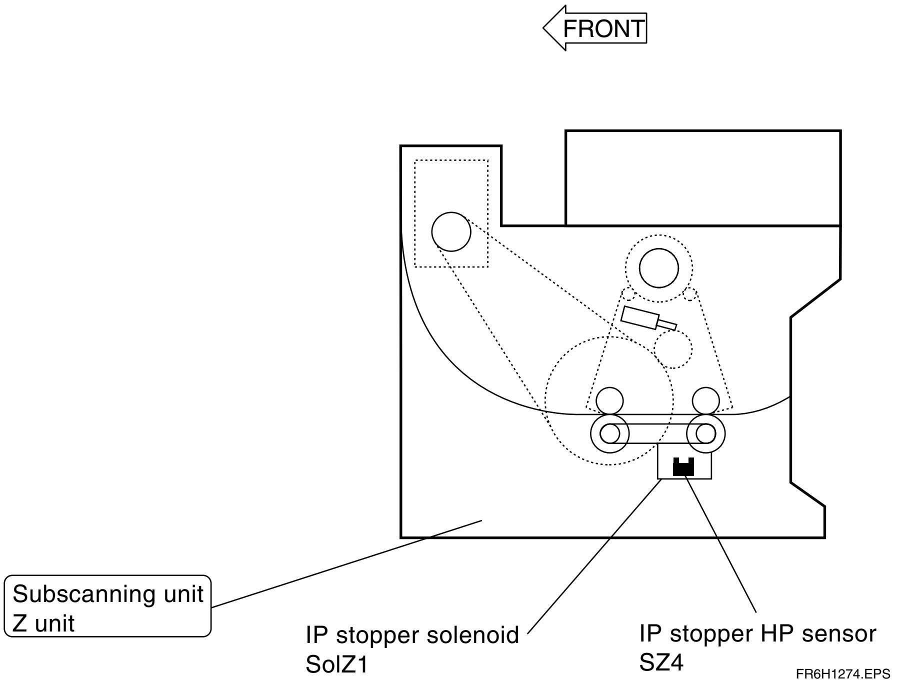
FR6H1272.EPS

## 5.1.12 Stopper Retreat 2

## <Fig. 1 Stopper Retreat 2 Flow>


START
1
Solenoid (SolZ1): OFF (Retreat)
Stopper
retreat
SZ4: Close?
Open (Protrude)
Timeout [TZ42: within 2 sec]
Close
(Retreat)
Retry?
Within 5 times [NZ12]
6 times or more
14341
IP stopper
retreat retry
END
10341
IP stopper
retreat failure
Delay [TZ44: 2sec]
1
FR6H1215.EPS

## <I/O Locations>


FRONT
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4
FR6H1274.EPS

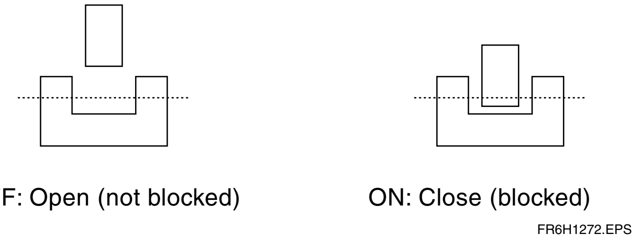
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |

TR6H1094.EPS

## <Sensor ON/OFF Status>

SZ4

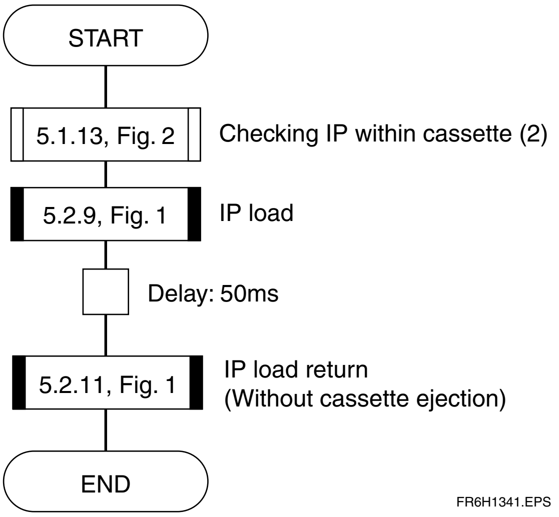

FR6H1272.EPS

OFF: Open (not blocked)

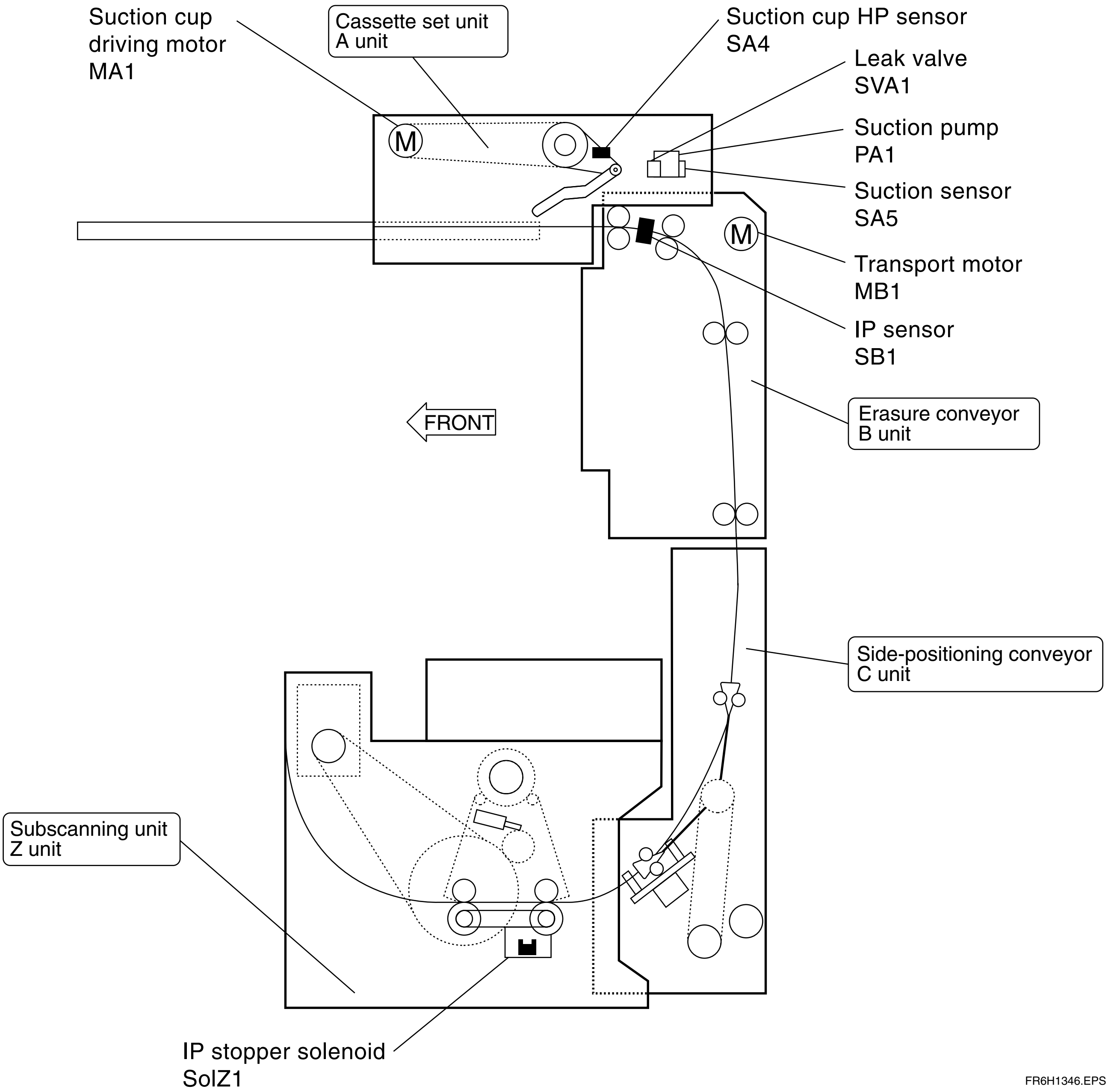
ON: Close (blocked)

## 5.1.13 Checking IP within Cassette

## <Fig. 1 Checking IP within Cassette Flow>


START
5.1.13, Fig. 2
Checking IP within cassette (2)
5.2.9, Fig. 1
IP load
Delay: 50ms
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
END
FR6H1341.EPS

## <I/O Locations>


Suction cup
driving motor
MA1
Cassette set unit
A unit
Suction cup HP sensor
SA4
Leak valve
SVA1
Suction pump
PA1
Suction sensor
SA5
Transport motor
MB1
IP sensor
SB1
Erasure conveyor
B unit
FRONT
M
M
Side-positioning conveyor
C unit
Subscanning unit
Z unit
IP stopper solenoid
SolZ1

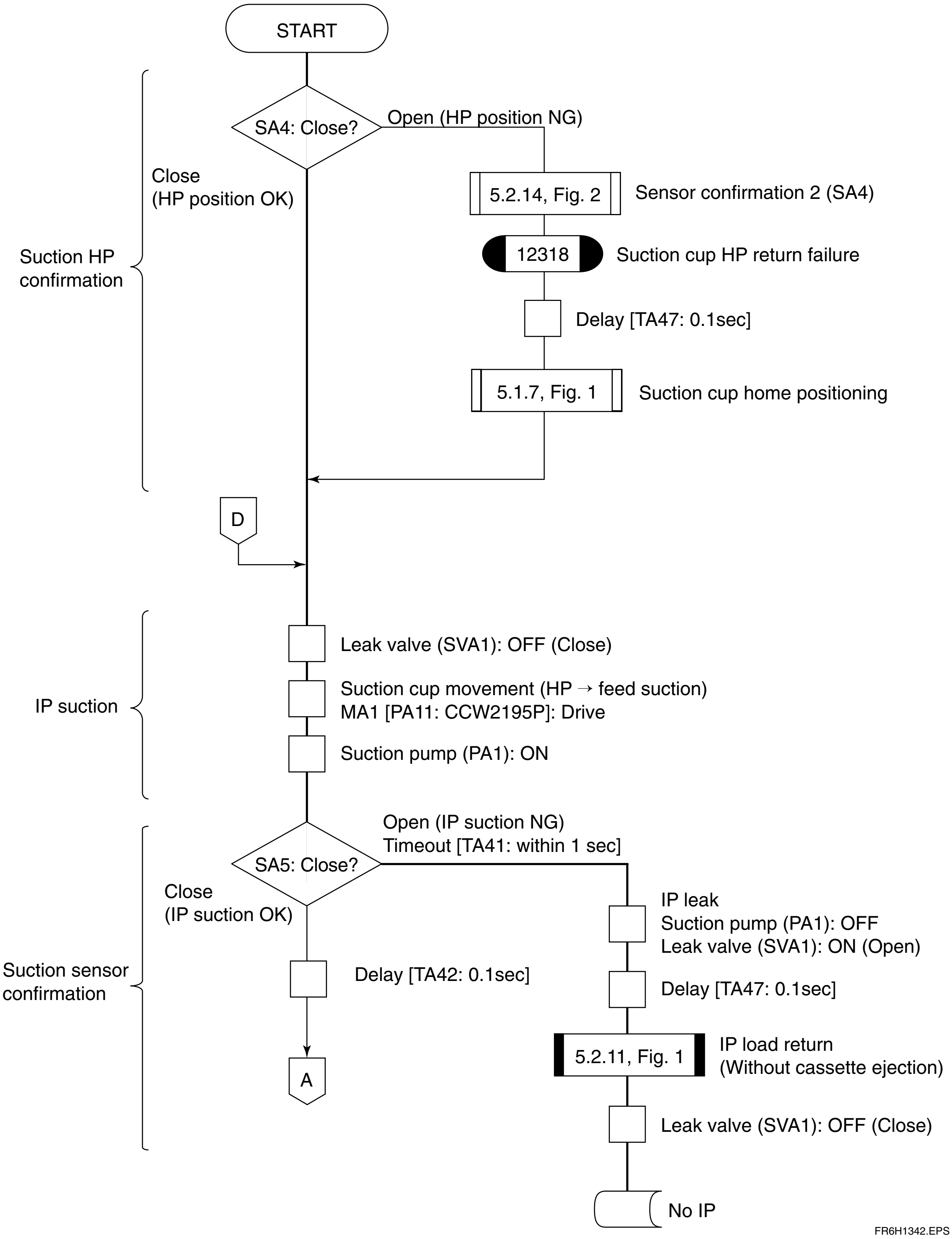
FR6H1346.EPS

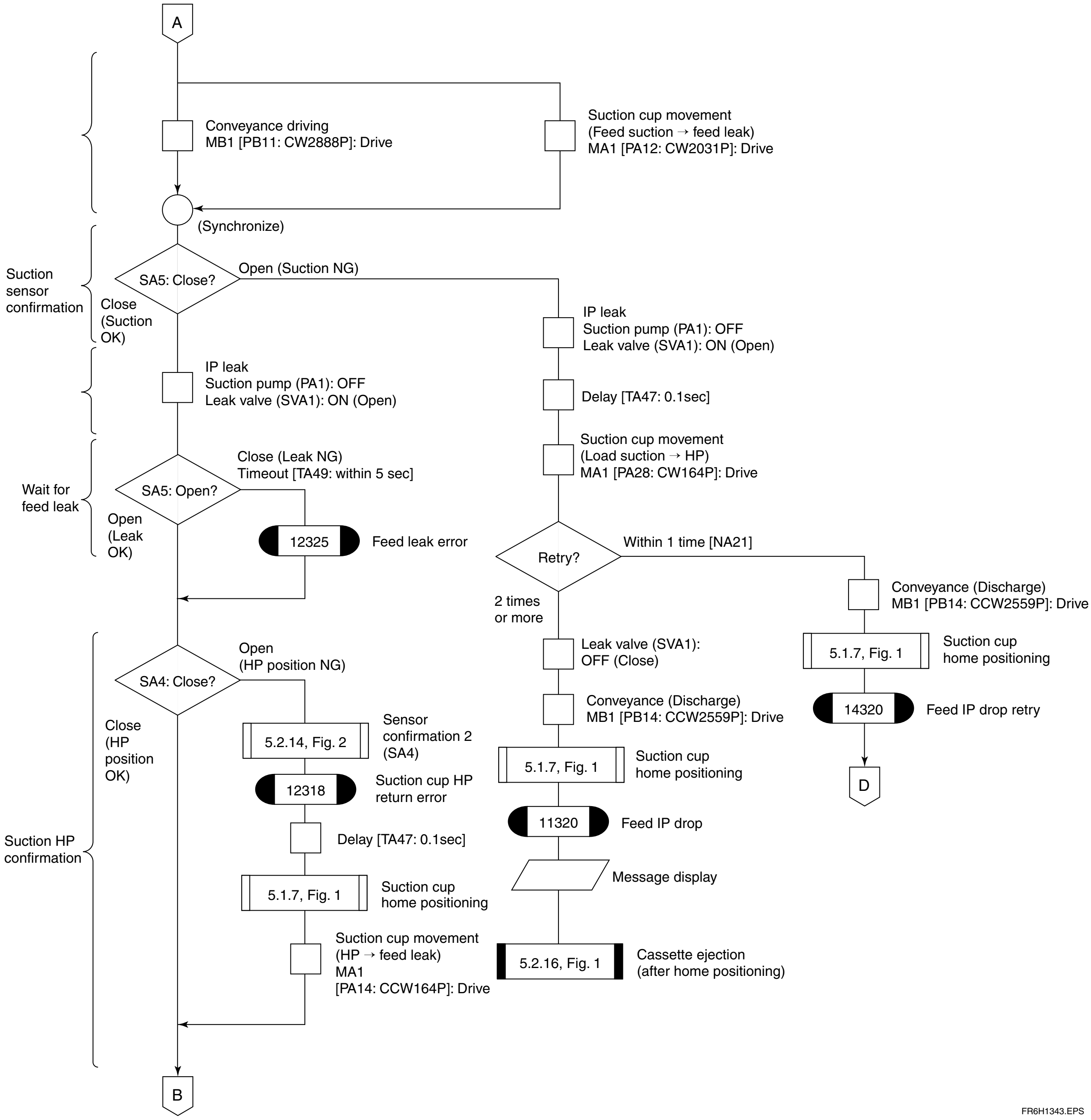
## <I/O Table>

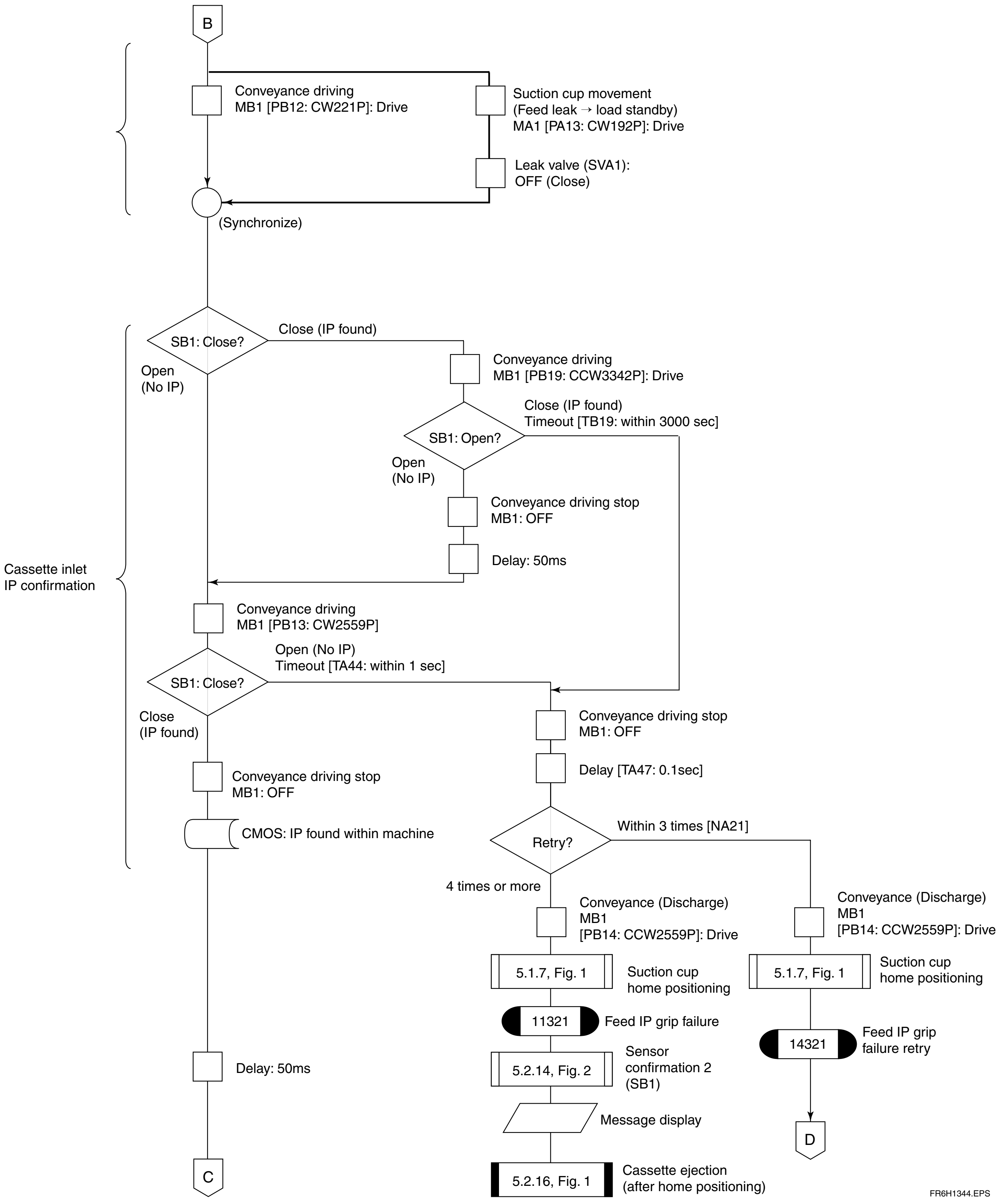
| Symbol | Name | Type | Function |
|---|---|---|---|
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| PA1 | IP suction | DC pump | Sucks when turned ON. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SA5 | Suction sensor | Suction sensor | Detects that it is sucked. |
| SB1 | Cassette inlet IP sensor | PI (19mm) | IP conveyance sensor |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |
| SVA1 | IP leak | Solenoid valve | Leaks when turned ON. |

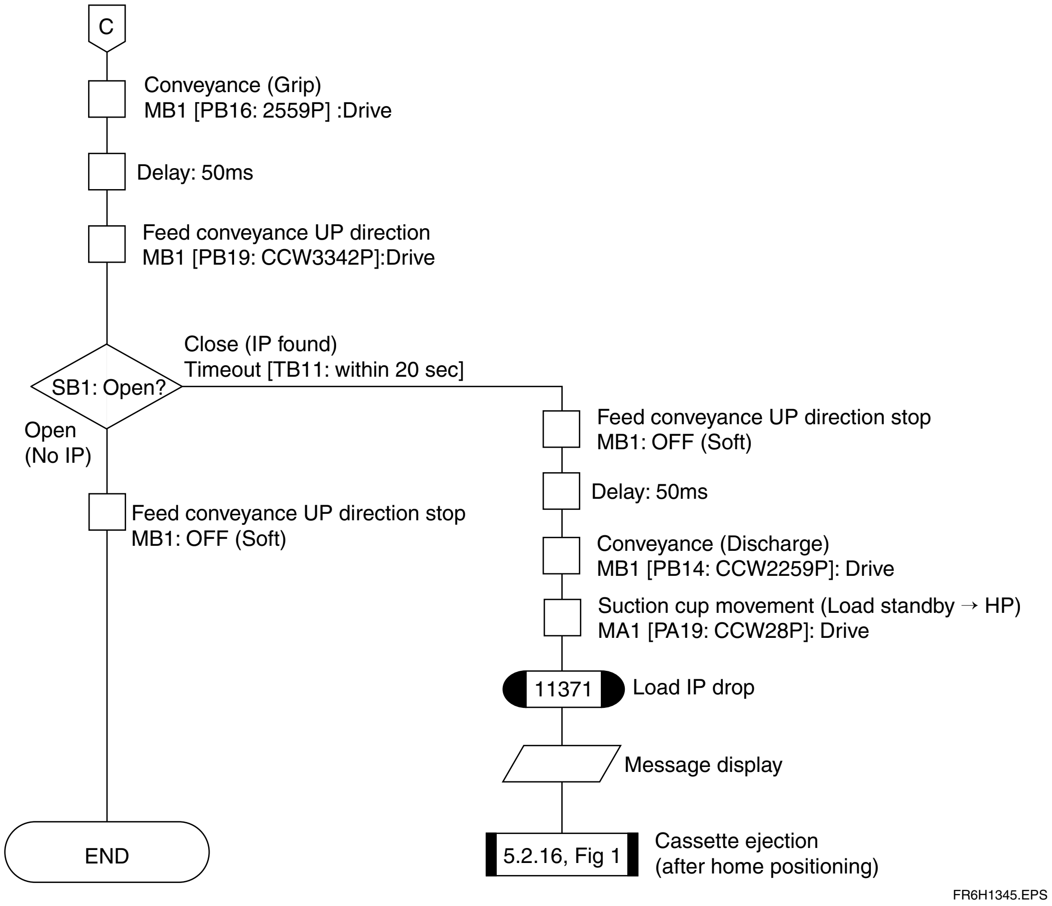
TR6H1096.EPS

## <Fig. 2 Checking IP within Cassette 2>


START
SA4: Close?
Open (HP position NG)
Close
(HP position OK)
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
12318
Suction cup HP return failure
Suction HP
confirmation
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
D
Leak valve (SVA1): OFF (Close)
Suction cup movement (HP → feed suction)
MA1 [PA11: CCW2195P]: Drive
IP suction
Suction pump (PA1): ON
Open (IP suction NG)
Timeout [TA41: within 1 sec]
SA5: Close?
Close
(IP suction OK)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Suction sensor
confirmation
Delay [TA42: 0.1sec]
Delay [TA47: 0.1sec]
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
A
Leak valve (SVA1): OFF (Close)
No IP
FR6H1342.EPS

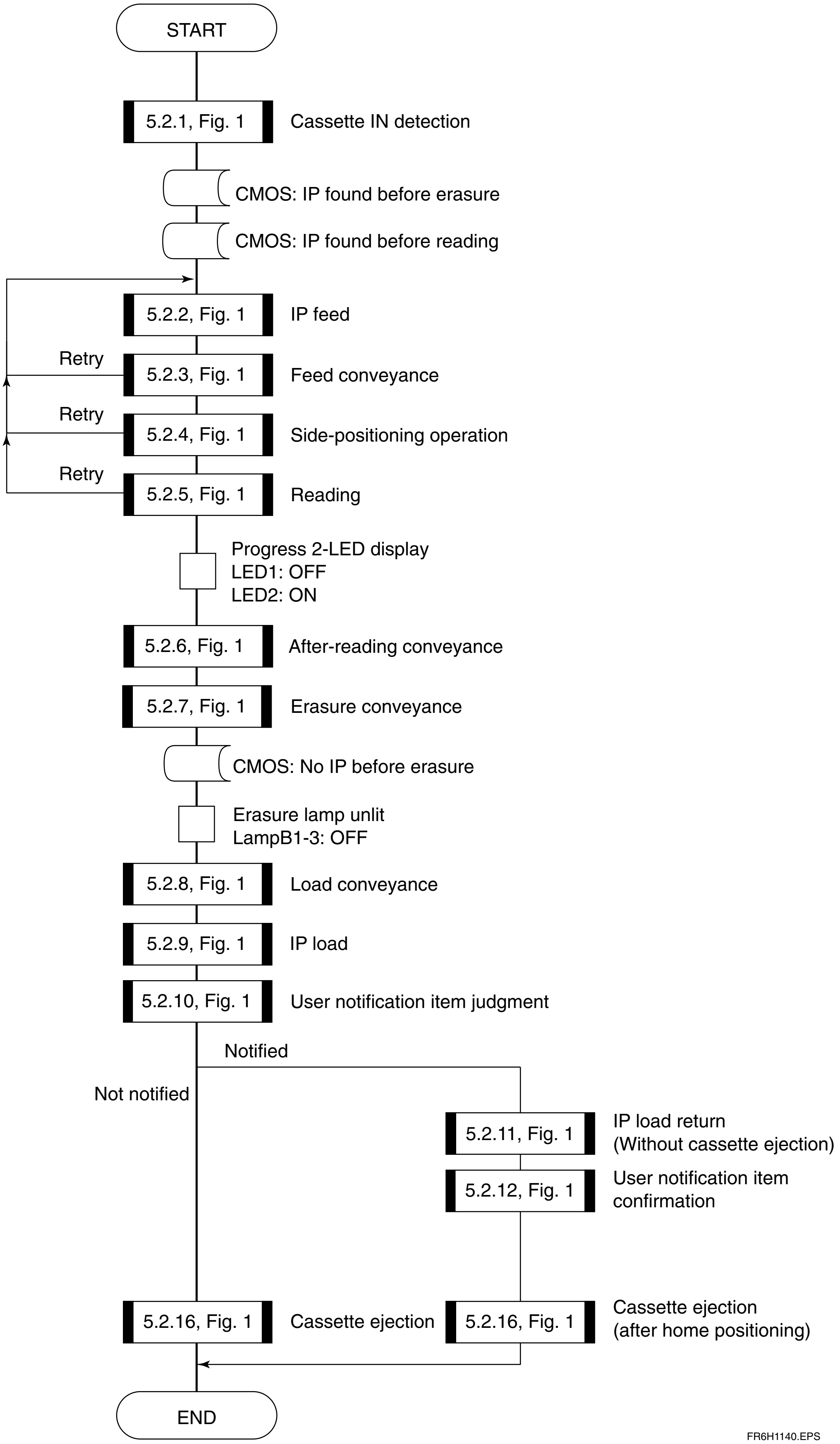

A
Conveyance driving
MB1 [PB11: CW2888P]: Drive
Suction cup movement
(Feed suction → feed leak)
MA1 [PA12: CW2031P]: Drive
(Synchronize)
Suction sensor confirmation
SA5: Close?
Open (Suction NG)
Close (Suction OK)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Delay [TA47: 0.1sec]
Suction cup movement
(Load suction → HP)
MA1 [PA28: CW164P]: Drive
Wait for feed leak
SA5: Open?
Close (Leak NG)
Timeout [TA49: within 5 sec]
Open (Leak OK)
12325
Feed leak error
Retry?
Within 1 time [NA21]
2 times or more
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
14320
Feed IP drop retry
D
Leak valve (SVA1):
OFF (Close)
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
11320
Feed IP drop
Message display
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
Suction HP confirmation
SA4: Close?
Open
(HP position NG)
Close (HP position OK)
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
12318
Suction cup HP return error
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Suction cup movement
(HP → feed leak)
MA1
[PA14: CCW164P]: Drive
B
FR6H1343.EPS


B
Conveyance driving
MB1 [PB12: CW221P]: Drive
Suction cup movement
(Feed leak → load standby)
MA1 [PA13: CW192P]: Drive
Leak valve (SVA1):
OFF (Close)
(Synchronize)
SB1: Close?
Close (IP found)
Open
(No IP)
Conveyance driving
MB1 [PB19: CCW3342P]: Drive
SB1: Open?
Close (IP found)
Timeout [TB19: within 3000 sec]
Open
(No IP)
Conveyance driving stop
MB1: OFF
Delay: 50ms
Cassette inlet
IP confirmation
Conveyance driving
MB1 [PB13: CW2559P]
SB1: Close?
Open (No IP)
Timeout [TA44: within 1 sec]
Close
(IP found)
Conveyance driving stop
MB1: OFF
Conveyance driving stop
MB1: OFF
Delay [TA47: 0.1sec]
CMOS: IP found within machine
Retry?
Within 3 times [NA21]
4 times or more
Conveyance (Discharge)
MB1
[PB14: CCW2559P]: Drive
Conveyance (Discharge)
MB1
[PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup
home positioning
5.1.7, Fig. 1
Suction cup
home positioning
11321
Feed IP grip failure
14321
Feed IP grip
failure retry
Delay: 50ms
5.2.14, Fig. 2
Sensor
confirmation 2
(SB1)
Message display
D
C
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
FR6H1344.EPS


C
Conveyance (Grip)
MB1 [PB16: 2559P] :Drive
Delay: 50ms
Feed conveyance UP direction
MB1 [PB19: CCW3342P]:Drive
SB1: Open?
Close (IP found)
Timeout [TB11: within 20 sec]
Open
(No IP)
Feed conveyance UP direction stop
MB1: OFF (Soft)
END
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2259P]: Drive
Suction cup movement (Load standby → HP)
MA1 [PA19: CCW28P]: Drive
11371
Load IP drop
Message display
5.2.16, Fig 1
Cassette ejection
(after home positioning)
FR6H1345.EPS

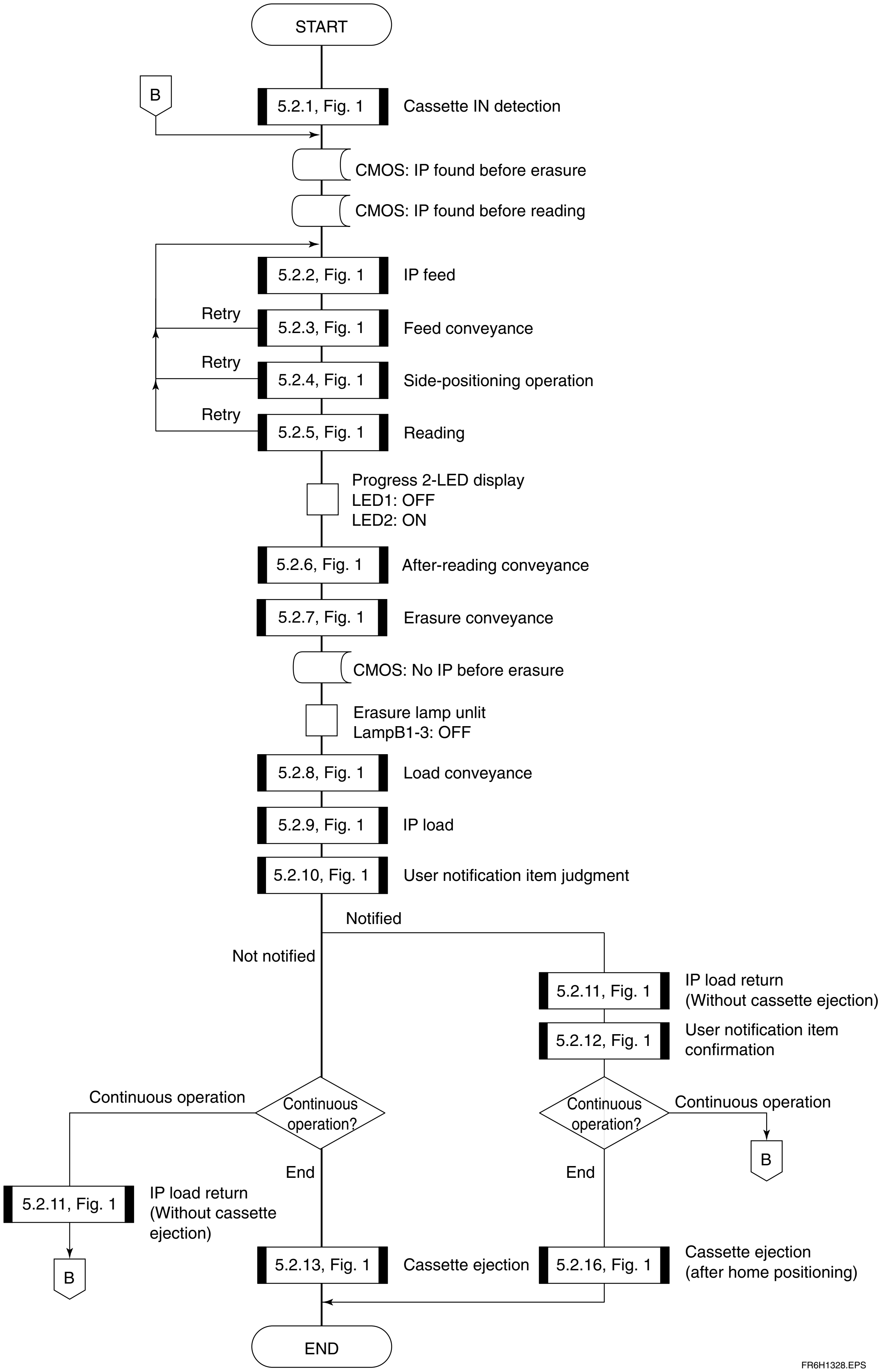
## 5.2 Routine Operation Flow

## <Fig. 1 Overall Summary Flow>


START
5.2.1, Fig. 1
Cassette IN detection
CMOS: IP found before erasure
CMOS: IP found before reading
5.2.2, Fig. 1
IP feed
Retry
5.2.3, Fig. 1
Feed conveyance
Retry
5.2.4, Fig. 1
Side-positioning operation
Retry
5.2.5, Fig. 1
Reading
Progress 2-LED display
LED1: OFF
LED2: ON
5.2.6, Fig. 1
After-reading conveyance
5.2.7, Fig. 1
Erasure conveyance
CMOS: No IP before erasure
Erasure lamp unlit
LampB1-3: OFF
5.2.8, Fig. 1
Load conveyance
5.2.9, Fig. 1
IP load
5.2.10, Fig. 1
User notification item judgment
Notified
Not notified
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
5.2.12, Fig. 1
User notification item
confirmation
5.2.16, Fig. 1
Cassette ejection
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
END

FR6H1140.EPS

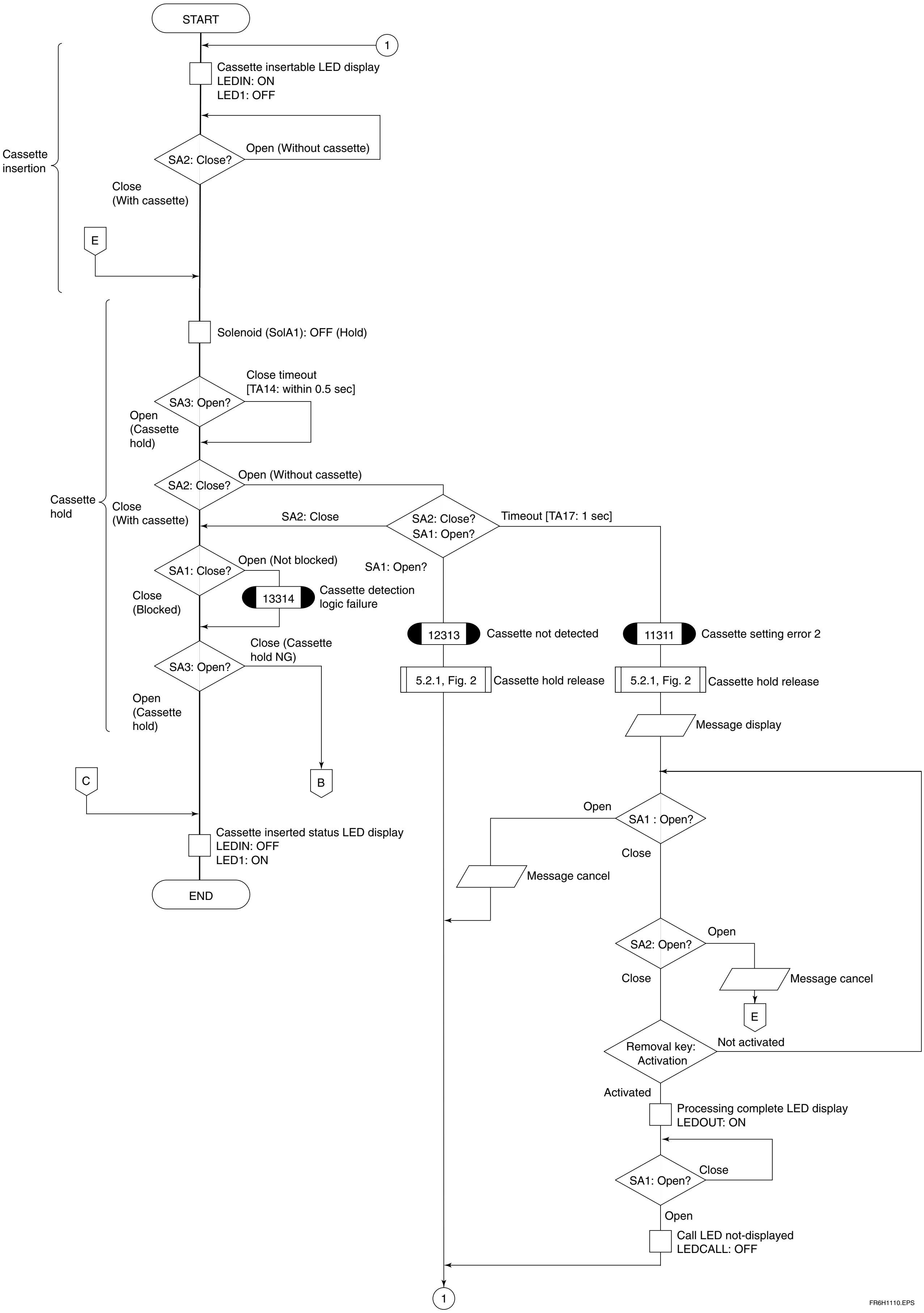
## <Fig. 2 For Continuous Conveyance under M-Utility “TEST MODE”>

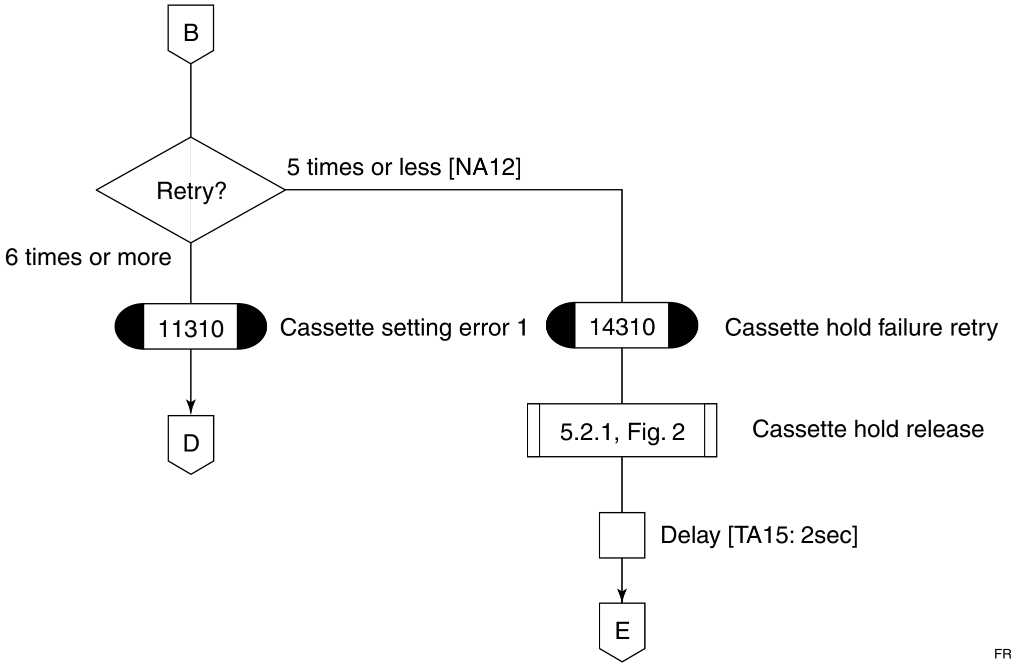

START
B
5.2.1, Fig. 1
Cassette IN detection
CMOS: IP found before erasure
CMOS: IP found before reading
5.2.2, Fig. 1
IP feed
Retry
5.2.3, Fig. 1
Feed conveyance
Retry
5.2.4, Fig. 1
Side-positioning operation
Retry
5.2.5, Fig. 1
Reading
Progress 2-LED display
LED1: OFF
LED2: ON
5.2.6, Fig. 1
After-reading conveyance
5.2.7, Fig. 1
Erasure conveyance
CMOS: No IP before erasure
Erasure lamp unlit
LampB1-3: OFF
5.2.8, Fig. 1
Load conveyance
5.2.9, Fig. 1
IP load
5.2.10, Fig. 1
User notification item judgment
Notified
Not notified
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
5.2.12, Fig. 1
User notification item
confirmation
Continuous operation
Continuous operation?
Continuous operation?
Continuous operation
B
End
End
5.2.11, Fig. 1
IP load return
(Without cassette
ejection)
B
5.2.13, Fig. 1
Cassette ejection
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
END

FR6H1328.EPS

## 5.2.1 Cassette IN Detection

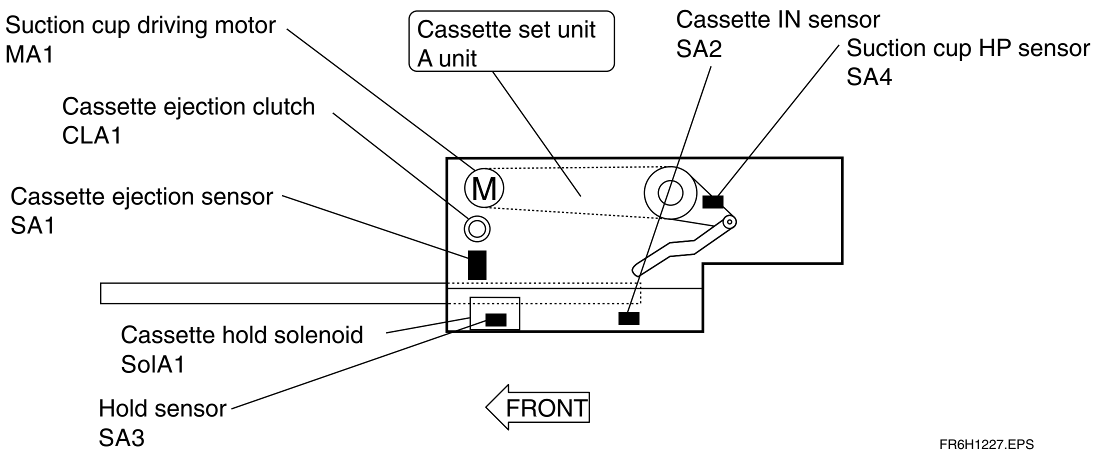
## <Fig. 1 Cassette IN Detection Flow>


START
1
Cassette insertable LED display
LEDIN: ON
LED1: OFF
Cassette insertion
SA2: Close?
Open (Without cassette)
Close
(With cassette)
E
Solenoid (SolA1): OFF (Hold)
SA3: Open?
Close timeout
[TA14: within 0.5 sec]
Open
(Cassette
hold)
SA2: Close?
Open (Without cassette)
Cassette
hold
Close
(With cassette)
SA2: Close
SA2: Close?
SA1: Open?
Timeout [TA17: 1 sec]
SA1: Close?
Open (Not blocked)
SA1: Open?
13314
Cassette detection
logic failure
Close
(Blocked)
12313
Cassette not detected
11311
Cassette setting error 2
SA3: Open?
Close (Cassette
hold NG)
5.2.1, Fig. 2
Cassette hold release
5.2.1, Fig. 2
Cassette hold release
Open
(Cassette
hold)
Message display
C
B
Open
SA1 : Open?
Close
Cassette inserted status LED display
LEDIN: OFF
LED1: ON
Message cancel
END
SA2: Open?
Open
Close
Message cancel
E
Removal key:
Activation
Not activated
Activated
Processing complete LED display
LEDOUT: ON
SA1: Open?
Close
Open
Call LED not-displayed
LEDCALL: OFF
1
FR6H1110.EPS


B
Retry?
5 times or less [NA12]
6 times or more
11310
Cassette setting error 1
14310
Cassette hold failure retry
D
5.2.1, Fig. 2
Cassette hold release
Delay [TA15: 2sec]
E

FR6H1112.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Cassette IN sensor
SA2
Suction cup HP sensor
SA4
Cassette ejection clutch
CLA1
Cassette ejection sensor
SA1
M
Cassette hold solenoid
SolA1
Hold sensor
SA3
FRONT

FR6H1227.EPS

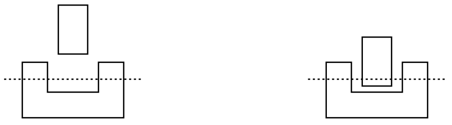
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA1 | Cassette ejection sensor | PI (5mm) | Detects that the cassette has been ejected. |
| SA2 | Cassette IN sensor | PI (5mm) | Detects that the cassette has been inserted. |
| SA3 | Cassette hold sensor | PI (5mm) | Detects the cassette hold completion. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SolA1 | Cassette hold SOL | Power-down solenoid | Retreats the cassette hold pin when turned ON. |
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |
| LEDIN | Cassette insertable | LED | Indicates that the cassette can be inserted. |
| LED1 | Progress 1 | LED | Indicates that the progress is "1" |
| CLA1 | Cassette ejection clutch | Clutch | Power connection for actuating cassette ejection operation. |

TR6H1005.EPS

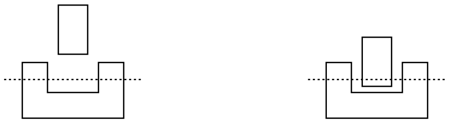
## <Sensor ON/OFF Status>

SA1/SA3/SA4



OFF: Open (not blocked)    ON: Close (blocked)

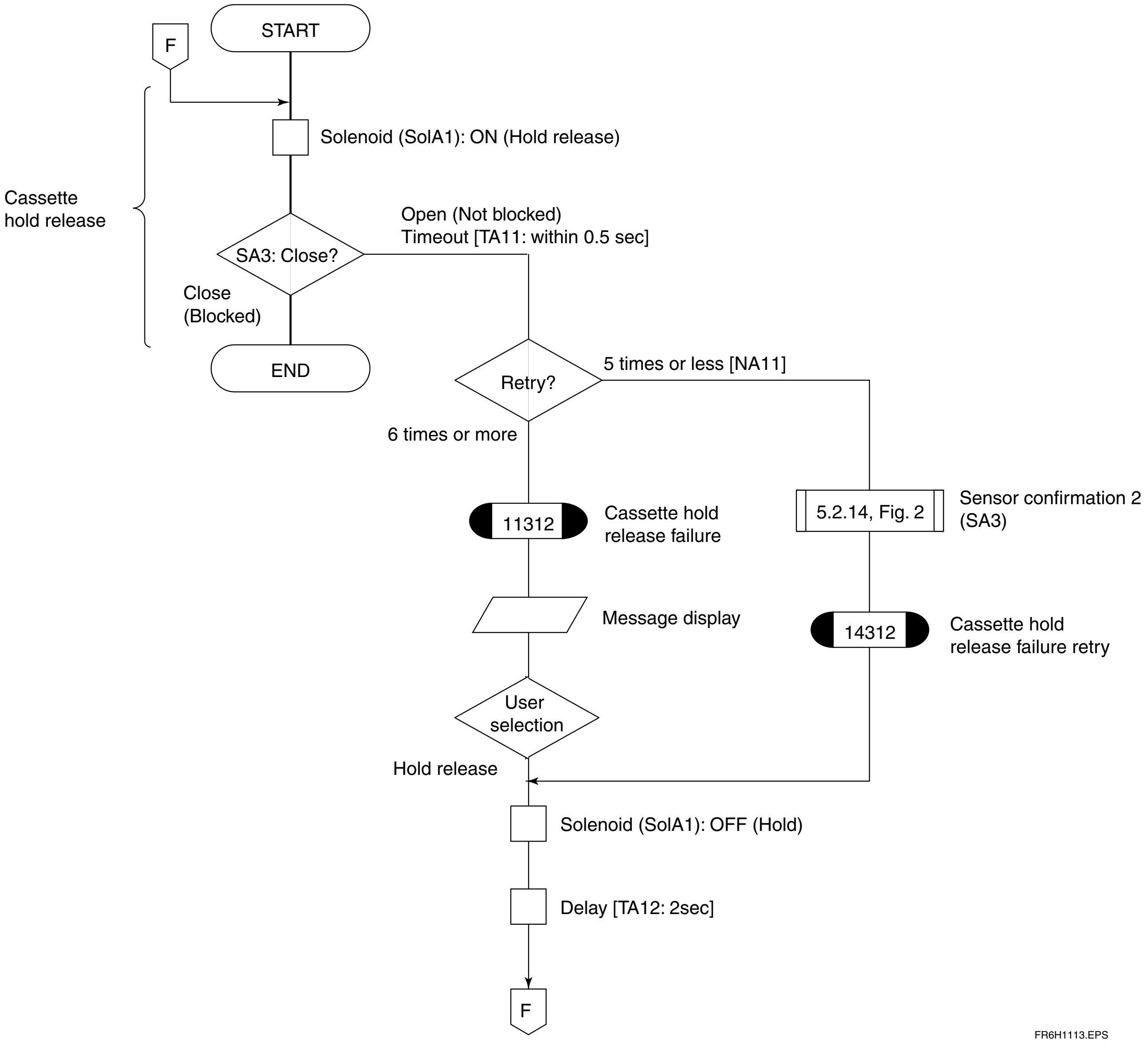
SA2



OFF: Open (without cassette)    ON: Close (with cassette)

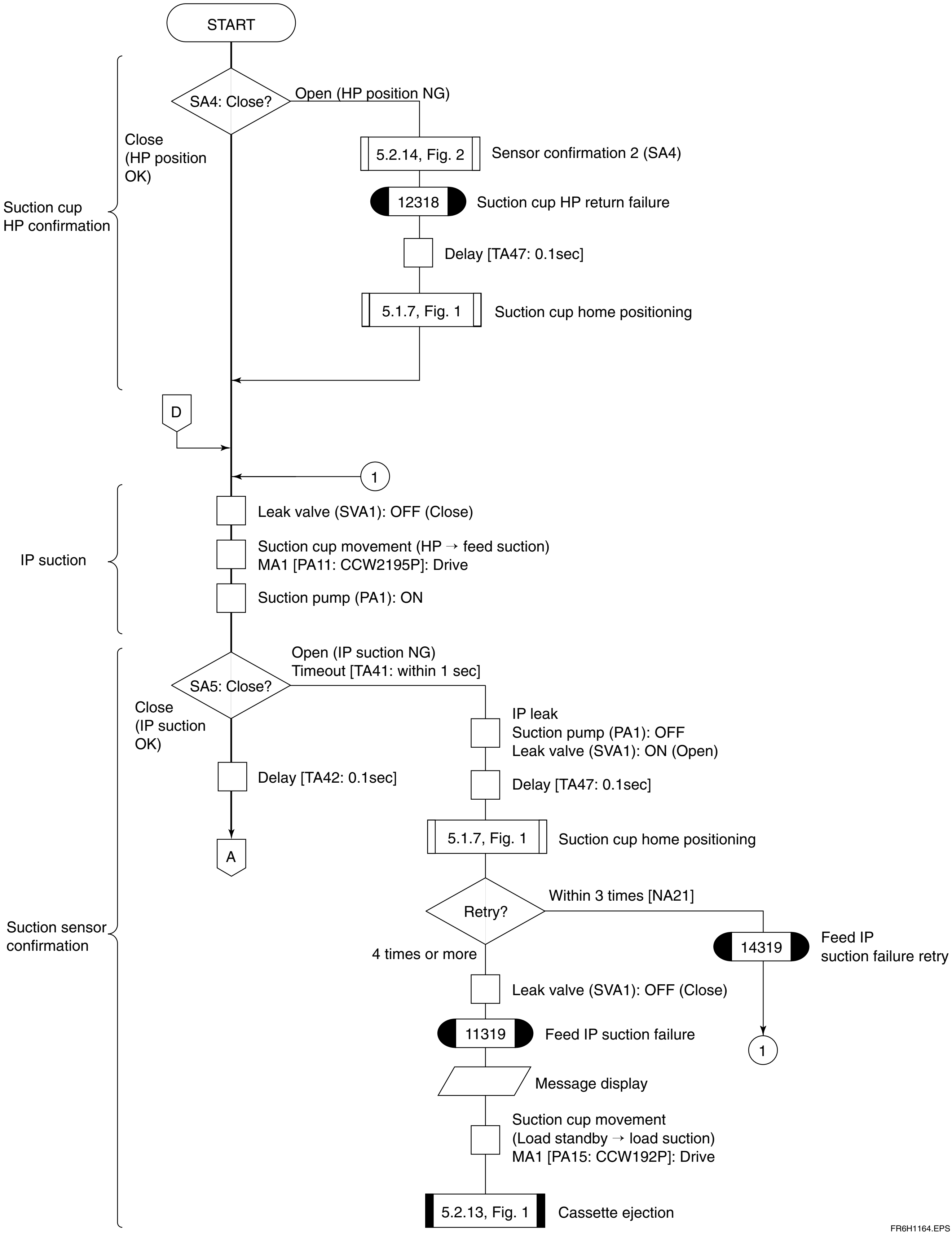
FR6H1268.EPS

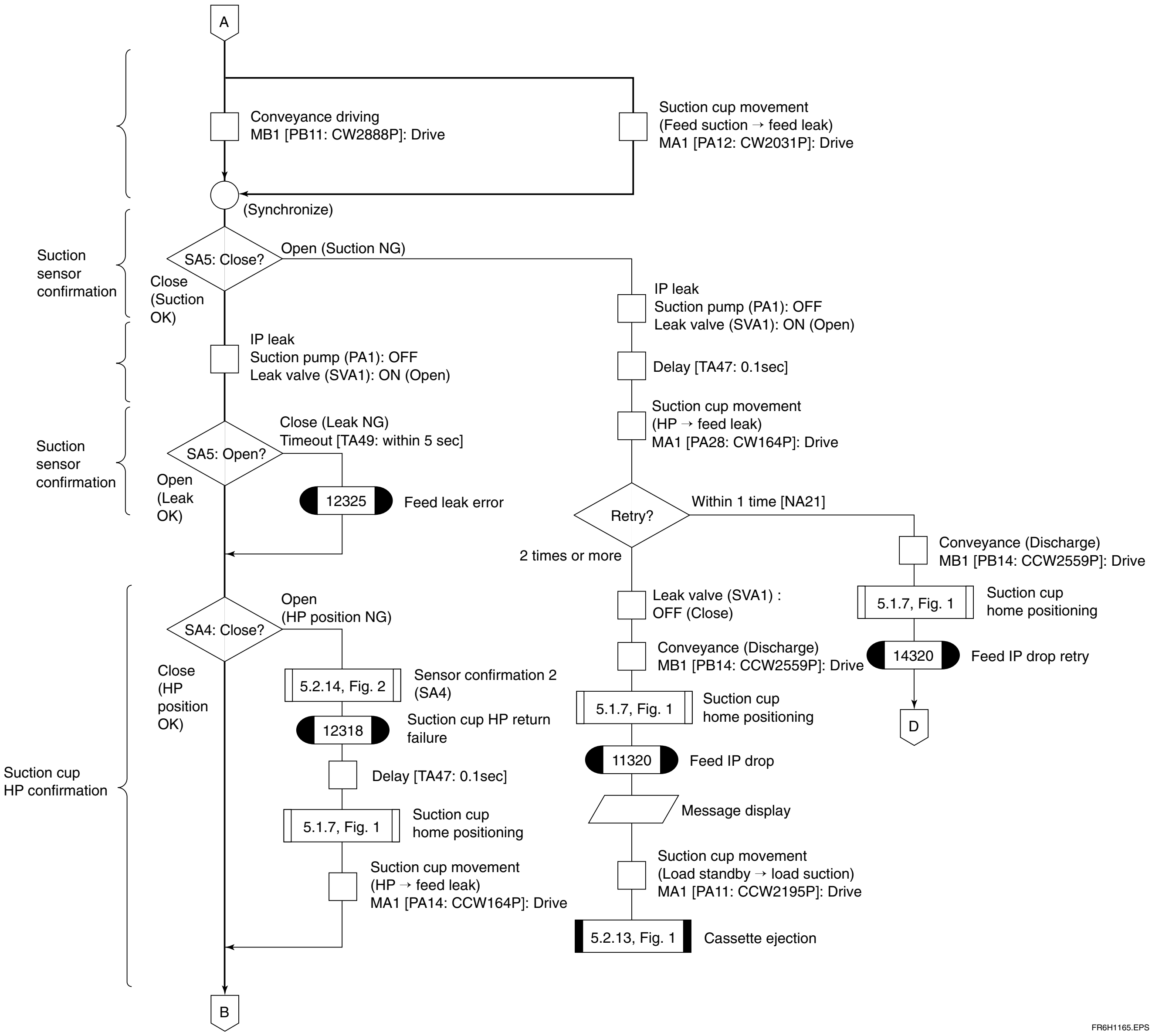
## <Fig. 2 Cassette Hold Release Flow>

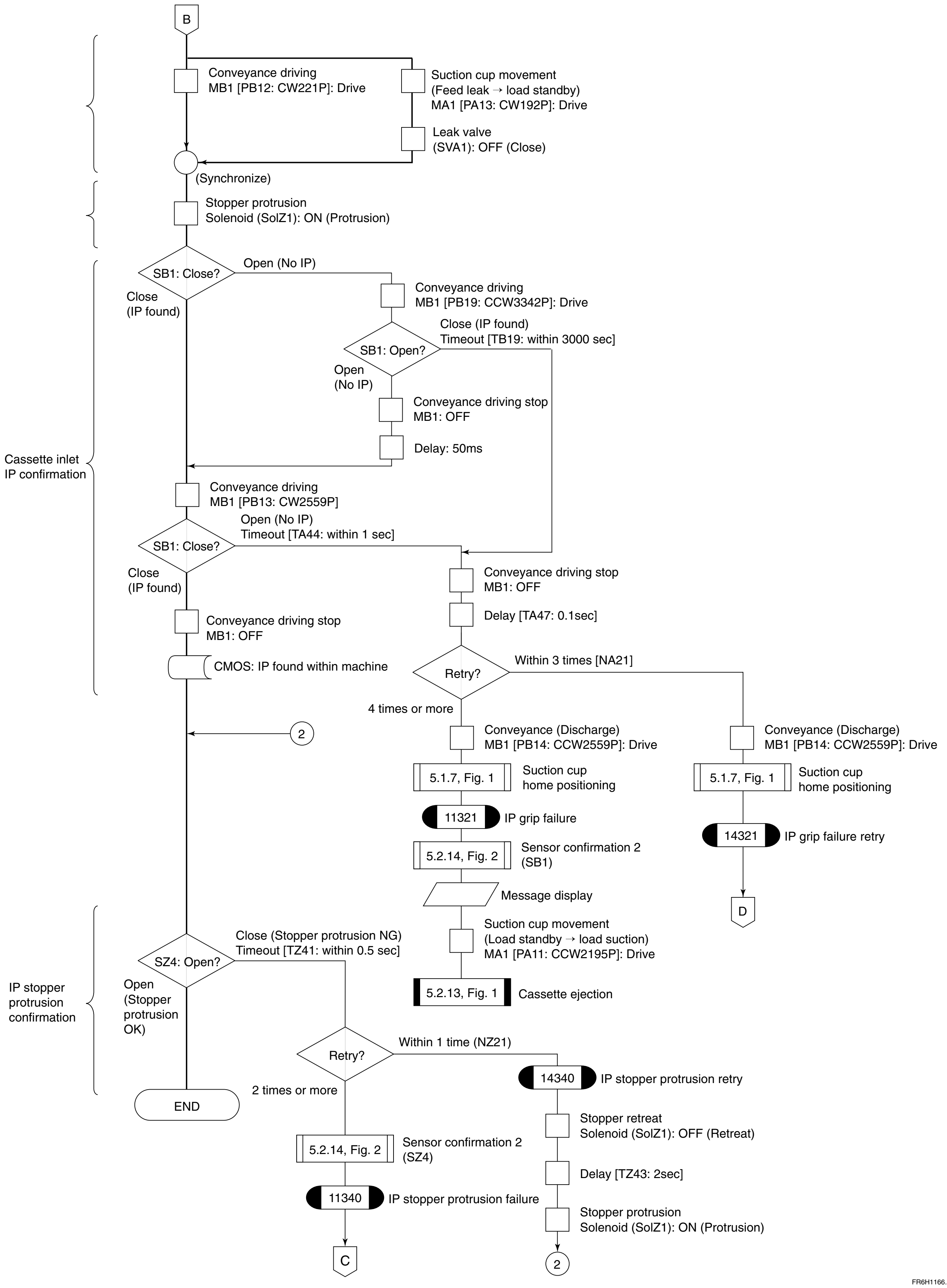

START
F
Solenoid (SolA1): ON (Hold release)
Cassette
hold release
Open (Not blocked)
Timeout [TA11: within 0.5 sec]
SA3: Close?
Close
(Blocked)
END
Retry?
5 times or less [NA11]
6 times or more
11312
Cassette hold
release failure
5.2.14, Fig. 2
Sensor confirmation 2
(SA3)
Message display
14312
Cassette hold
release failure retry
User
selection
Hold release
Solenoid (SolA1): OFF (Hold)
Delay [TA12: 2sec]
F
FR6H1113.EPS

## 5.2.2 IP Feed

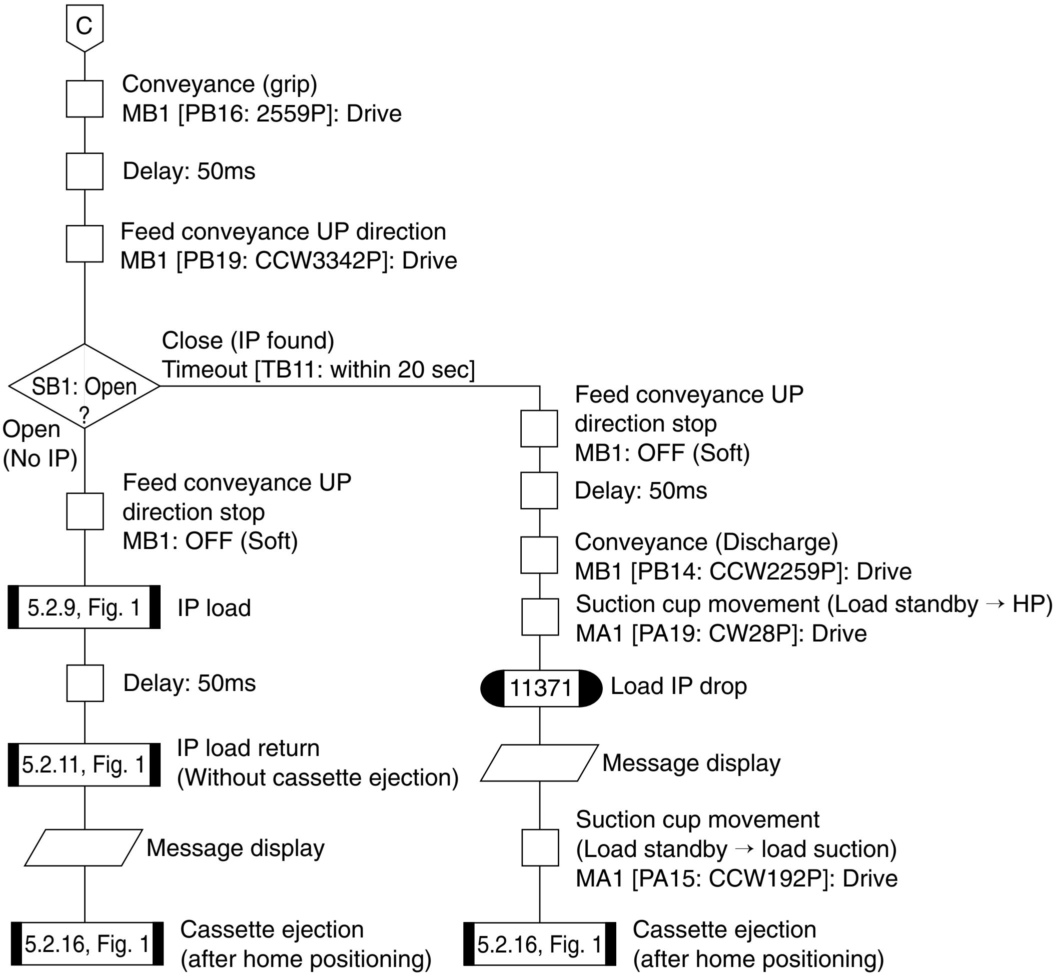
## <Fig. 1 IP Feed Flow>


START
SA4: Close?
Open (HP position NG)
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
12318
Suction cup HP return failure
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Close
(HP position
OK)
Suction cup
HP confirmation
D
1
Leak valve (SVA1): OFF (Close)
Suction cup movement (HP → feed suction)
MA1 [PA11: CCW2195P]: Drive
Suction pump (PA1): ON
IP suction
SA5: Close?
Open (IP suction NG)
Timeout [TA41: within 1 sec]
Close
(IP suction
OK)
Delay [TA42: 0.1sec]
A
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Retry?
Within 3 times [NA21]
4 times or more
14319
Feed IP
suction failure retry
Leak valve (SVA1): OFF (Close)
11319
Feed IP suction failure
1
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
5.2.13, Fig. 1
Cassette ejection
Suction sensor
confirmation
FR6H1164.EPS


A
Conveyance driving
MB1 [PB11: CW2888P]: Drive
Suction cup movement
(Feed suction → feed leak)
MA1 [PA12: CW2031P]: Drive
(Synchronize)
Suction sensor confirmation
SA5: Close?
Open (Suction NG)
Close (Suction OK)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Delay [TA47: 0.1sec]
Suction cup movement
(HP → feed leak)
MA1 [PA28: CW164P]: Drive
Suction sensor confirmation
SA5: Open?
Close (Leak NG)
Timeout [TA49: within 5 sec]
Open (Leak OK)
12325
Feed leak error
Retry?
Within 1 time [NA21]
2 times or more
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
14320
Feed IP drop retry
D
Leak valve (SVA1) : OFF (Close)
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
11320
Feed IP drop
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA11: CCW2195P]: Drive
5.2.13, Fig. 1
Cassette ejection
Suction cup HP confirmation
SA4: Close?
Open (HP position NG)
Close (HP position OK)
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
12318
Suction cup HP return failure
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Suction cup movement
(HP → feed leak)
MA1 [PA14: CCW164P]: Drive
B
FR6H1165.EPS

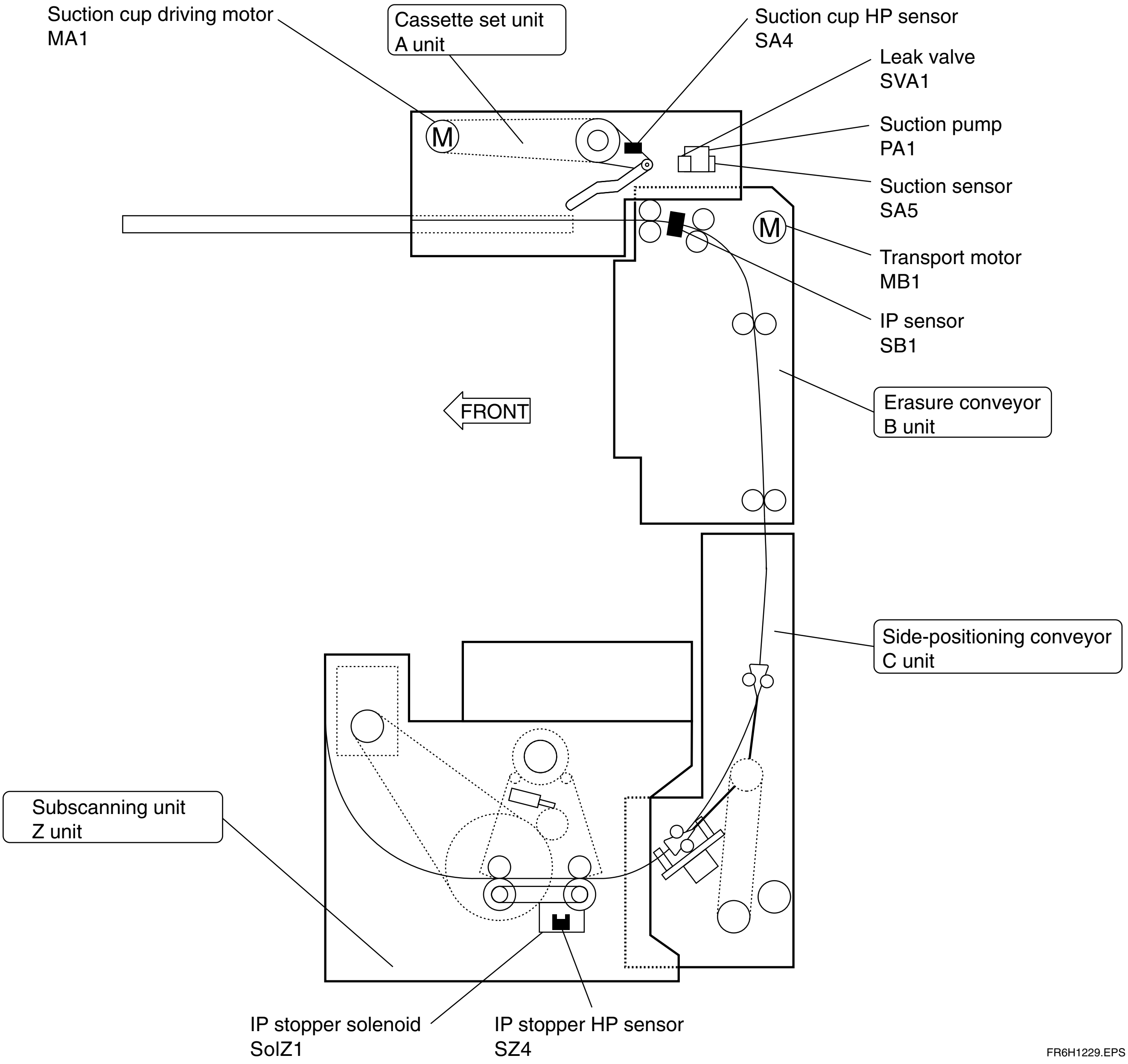

B
Conveyance driving
MB1 [PB12: CW221P]: Drive
Suction cup movement
(Feed leak → load standby)
MA1 [PA13: CW192P]: Drive
Leak valve
(SVA1): OFF (Close)
(Synchronize)
Stopper protrusion
Solenoid (SolZ1): ON (Protrusion)
SB1: Close?
Open (No IP)
Close
(IP found)
Conveyance driving
MB1 [PB19: CCW3342P]: Drive
SB1: Open?
Close (IP found)
Timeout [TB19: within 3000 sec]
Open
(No IP)
Conveyance driving stop
MB1: OFF
Delay: 50ms
Cassette inlet
IP confirmation
Conveyance driving
MB1 [PB13: CW2559P]
SB1: Close?
Open (No IP)
Timeout [TA44: within 1 sec]
Close
(IP found)
Conveyance driving stop
MB1: OFF
Delay [TA47: 0.1sec]
Conveyance driving stop
MB1: OFF
CMOS: IP found within machine
Retry?
Within 3 times [NA21]
4 times or more
2
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup
home positioning
5.1.7, Fig. 1
Suction cup
home positioning
11321
IP grip failure
14321
IP grip failure retry
5.2.14, Fig. 2
Sensor confirmation 2
(SB1)
D
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA11: CCW2195P]: Drive
5.2.13, Fig. 1
Cassette ejection
SZ4: Open?
Close (Stopper protrusion NG)
Timeout [TZ41: within 0.5 sec]
IP stopper
protrusion
confirmation
Open
(Stopper
protrusion
OK)
Retry?
Within 1 time (NZ21)
14340
IP stopper protrusion retry
2 times or more
END
Stopper retreat
Solenoid (SolZ1): OFF (Retreat)
5.2.14, Fig. 2
Sensor confirmation 2
(SZ4)
Delay [TZ43: 2sec]
11340
IP stopper protrusion failure
Stopper protrusion
Solenoid (SolZ1): ON (Protrusion)
C
2

FR6H1166.EPS


C
Conveyance (grip)
MB1 [PB16: 2559P]: Drive
Delay: 50ms
Feed conveyance UP direction
MB1 [PB19: CCW3342P]: Drive
SB1: Open ?
Close (IP found)
Timeout [TB11: within 20 sec]
Open
(No IP)
Feed conveyance UP
direction stop
MB1: OFF (Soft)
5.2.9, Fig. 1
IP load
Delay: 50ms
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
Message display
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
Feed conveyance UP
direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2259P]: Drive
Suction cup movement (Load standby → HP)
MA1 [PA19: CW28P]: Drive
11371
Load IP drop
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
5.2.16, Fig. 1
Cassette ejection
(after home positioning)

FR6H1167.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Suction cup HP sensor
SA4
Leak valve
SVA1
Suction pump
PA1
Suction sensor
SA5
Transport motor
MB1
IP sensor
SB1
M
M
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4
FR6H1229.EPS

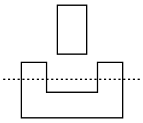
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| PA1 | IP suction | DC pump | Sucks when turned ON. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SA5 | Suction sensor | Suction sensor | Detects that it is sucked. |
| SB1 | Cassette inlet IP sensor | PI (19mm) | IP conveyance sensor |
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |
| SVA1 | IP leak | Solenoid valve | Leaks when turned ON. |

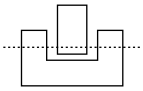
TR6H1088.EPS

# <Sensor ON/OFF Status>

SA4/SA5/SZ4

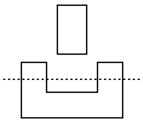


OFF: Open (not blocked)

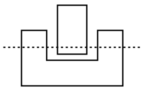


ON: Close (blocked)

SB1



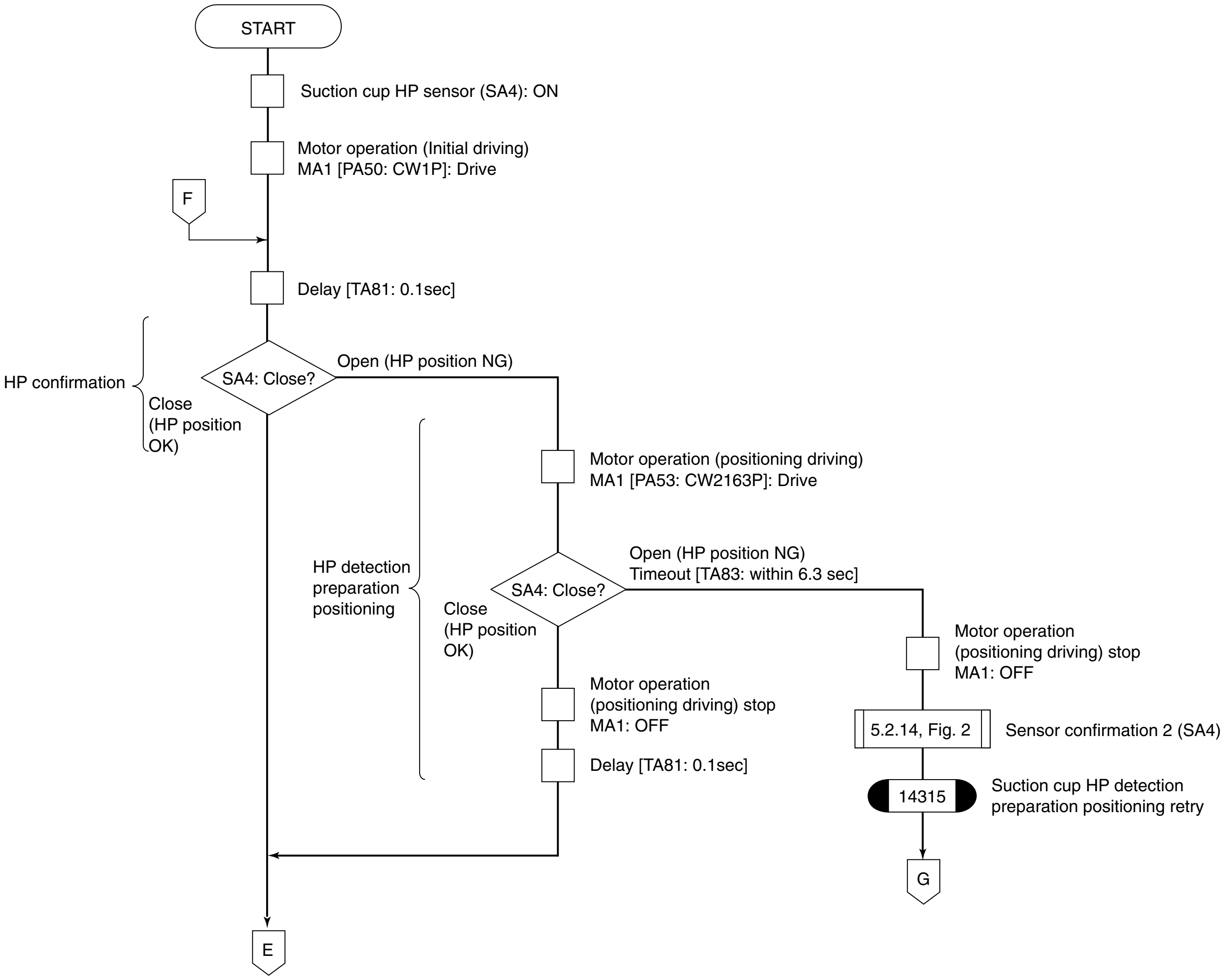
OFF: Open (no IP)



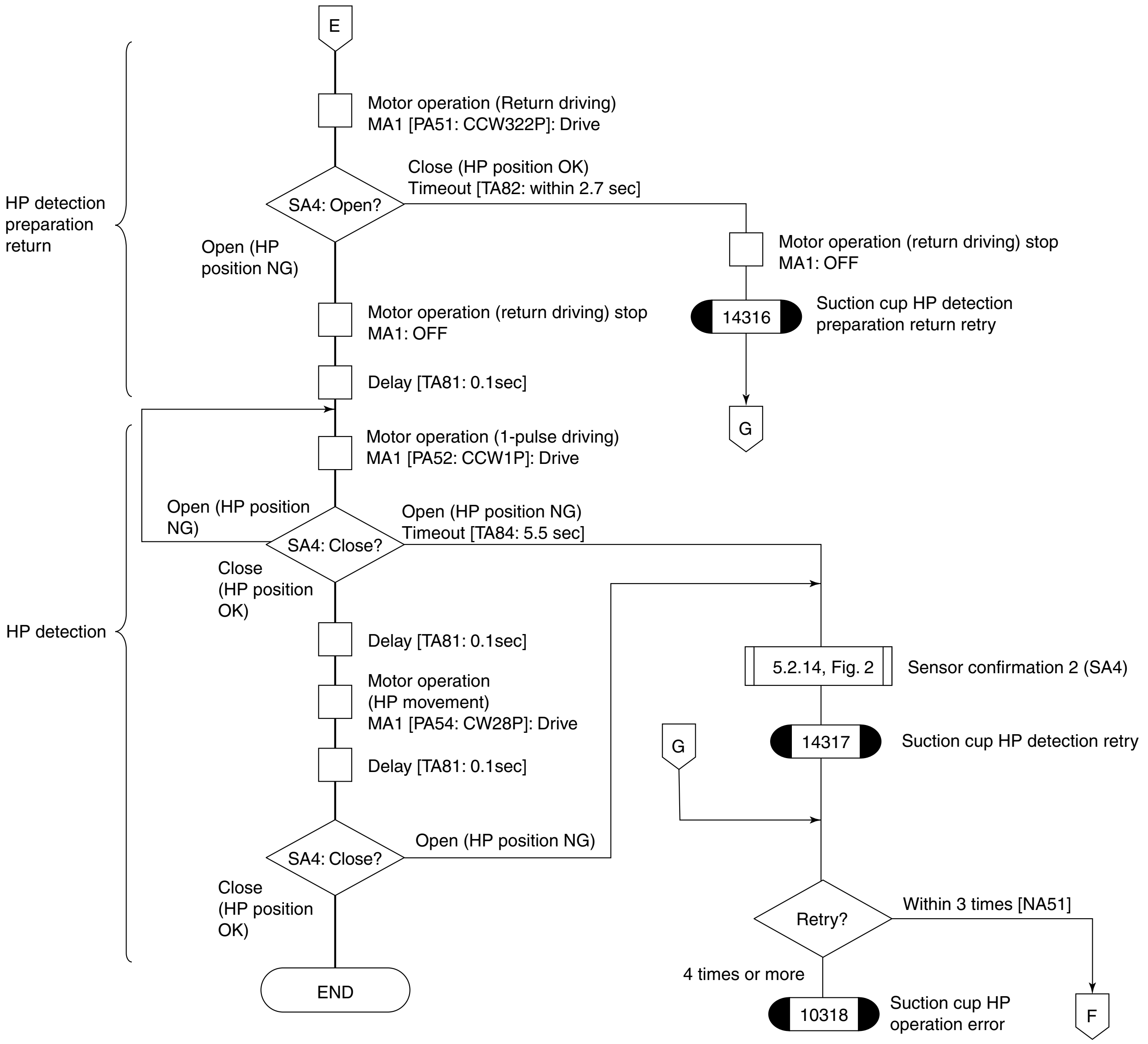
ON: Close (IP found)

FR6H1254.EPS

# <Fig. 2 Suction Cup Home Positioning Flow>


START
Suction cup HP sensor (SA4): ON
Motor operation (Initial driving)
MA1 [PA50: CW1P]: Drive
F
Delay [TA81: 0.1sec]
HP confirmation
SA4: Close?
Open (HP position NG)
Close
(HP position
OK)
Motor operation (positioning driving)
MA1 [PA53: CW2163P]: Drive
HP detection
preparation
positioning
SA4: Close?
Open (HP position NG)
Timeout [TA83: within 6.3 sec]
Close
(HP position
OK)
Motor operation
(positioning driving) stop
MA1: OFF
Delay [TA81: 0.1sec]
Motor operation
(positioning driving) stop
MA1: OFF
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
14315
Suction cup HP detection
preparation positioning retry
G
E

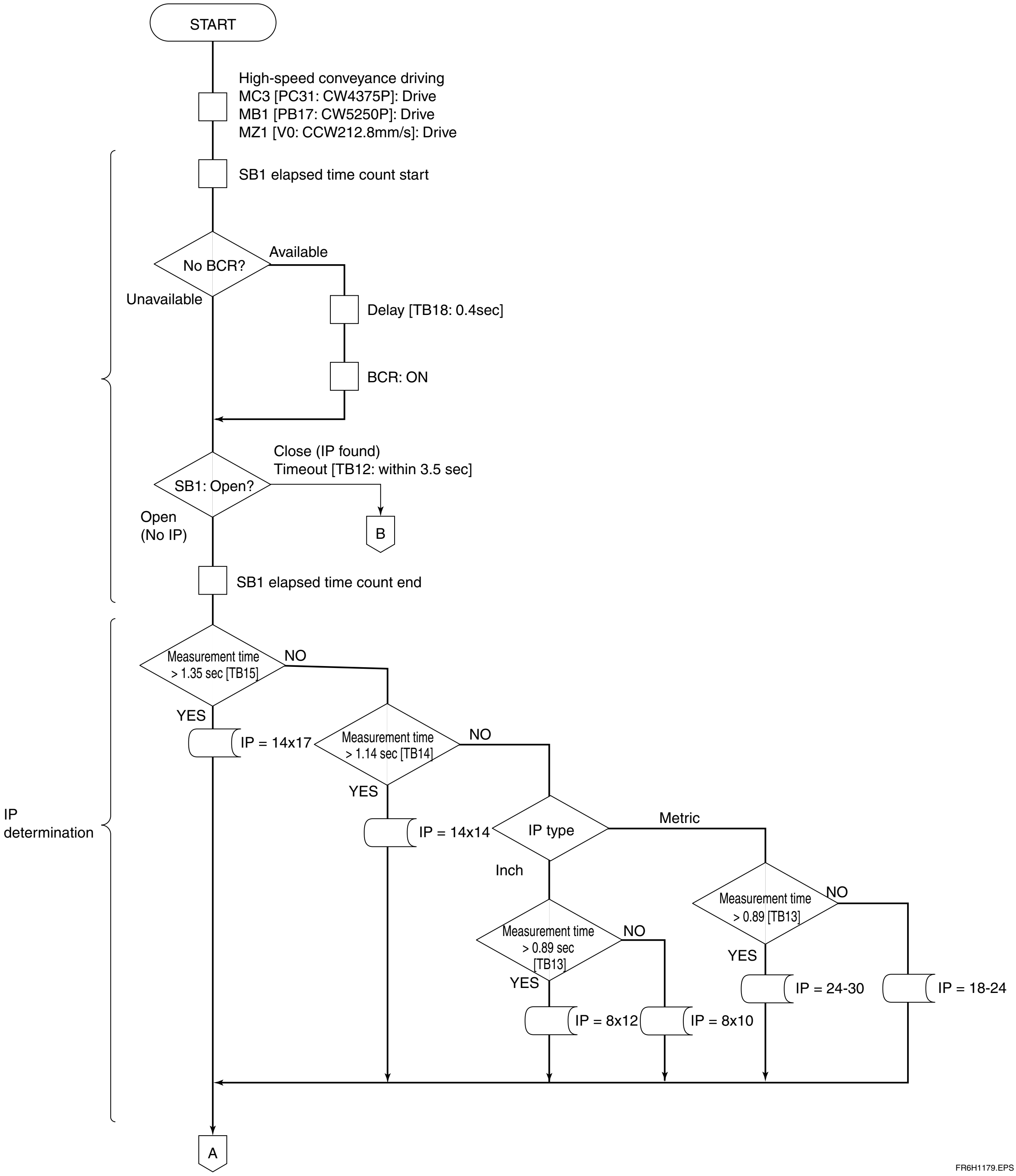
FR6H1168.EPS


E
Motor operation (Return driving)
MA1 [PA51: CCW322P]: Drive
SA4: Open?
Close (HP position OK)
Timeout [TA82: within 2.7 sec]
HP detection preparation return
Open (HP position NG)
Motor operation (return driving) stop
MA1: OFF
Motor operation (return driving) stop
MA1: OFF
14316
Suction cup HP detection preparation return retry
Delay [TA81: 0.1sec]
G
Motor operation (1-pulse driving)
MA1 [PA52: CCW1P]: Drive
Open (HP position NG)
SA4: Close?
Open (HP position NG)
Timeout [TA84: 5.5 sec]
Close (HP position OK)
HP detection
Delay [TA81: 0.1sec]
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
Motor operation (HP movement)
MA1 [PA54: CW28P]: Drive
G
14317
Suction cup HP detection retry
Delay [TA81: 0.1sec]
SA4: Close?
Open (HP position NG)
Close (HP position OK)
Retry?
Within 3 times [NA51]
4 times or more
END
10318
Suction cup HP operation error
F

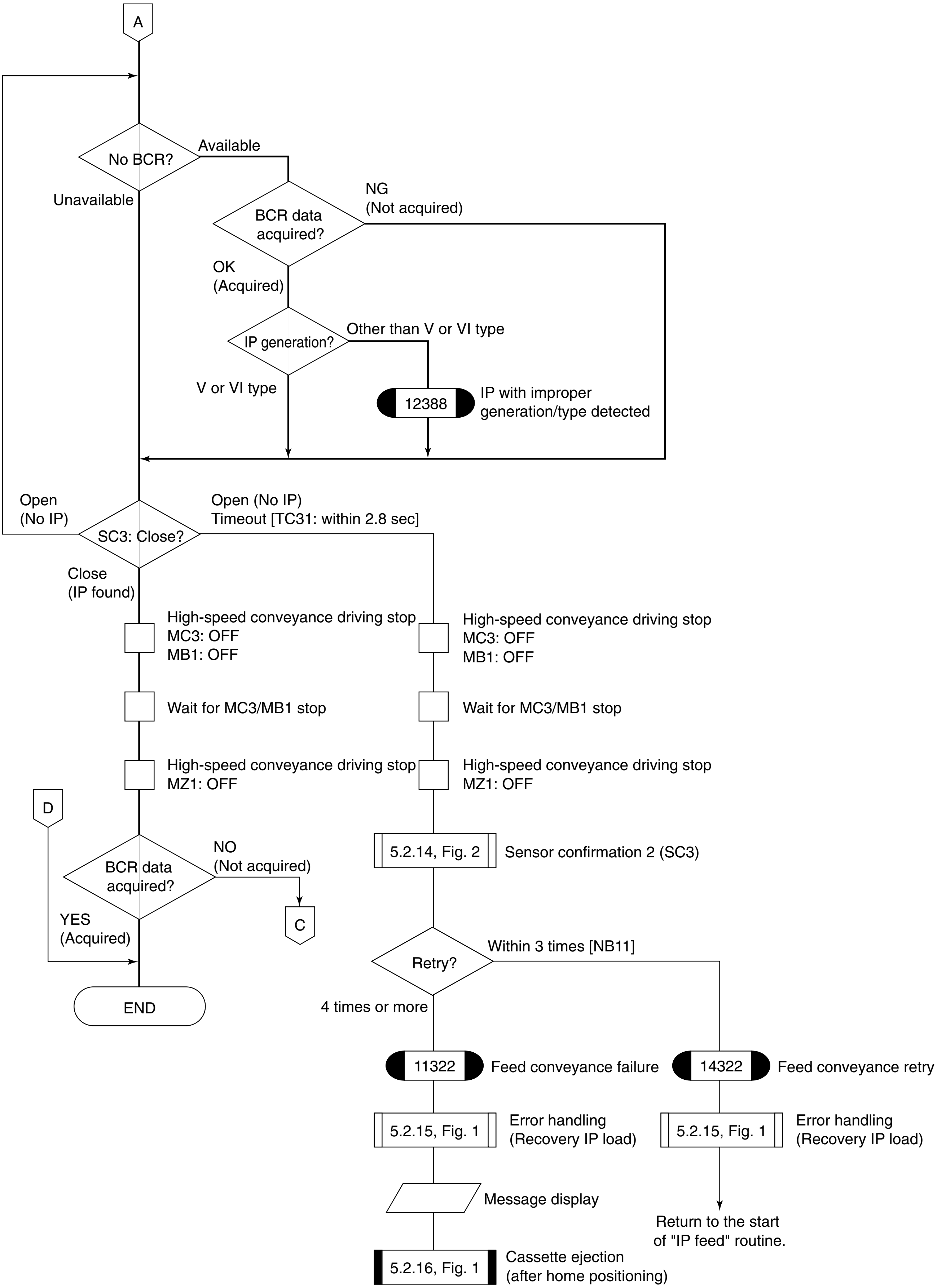
FR6H1169.EPS

## 5.2.3 Feed Conveyance

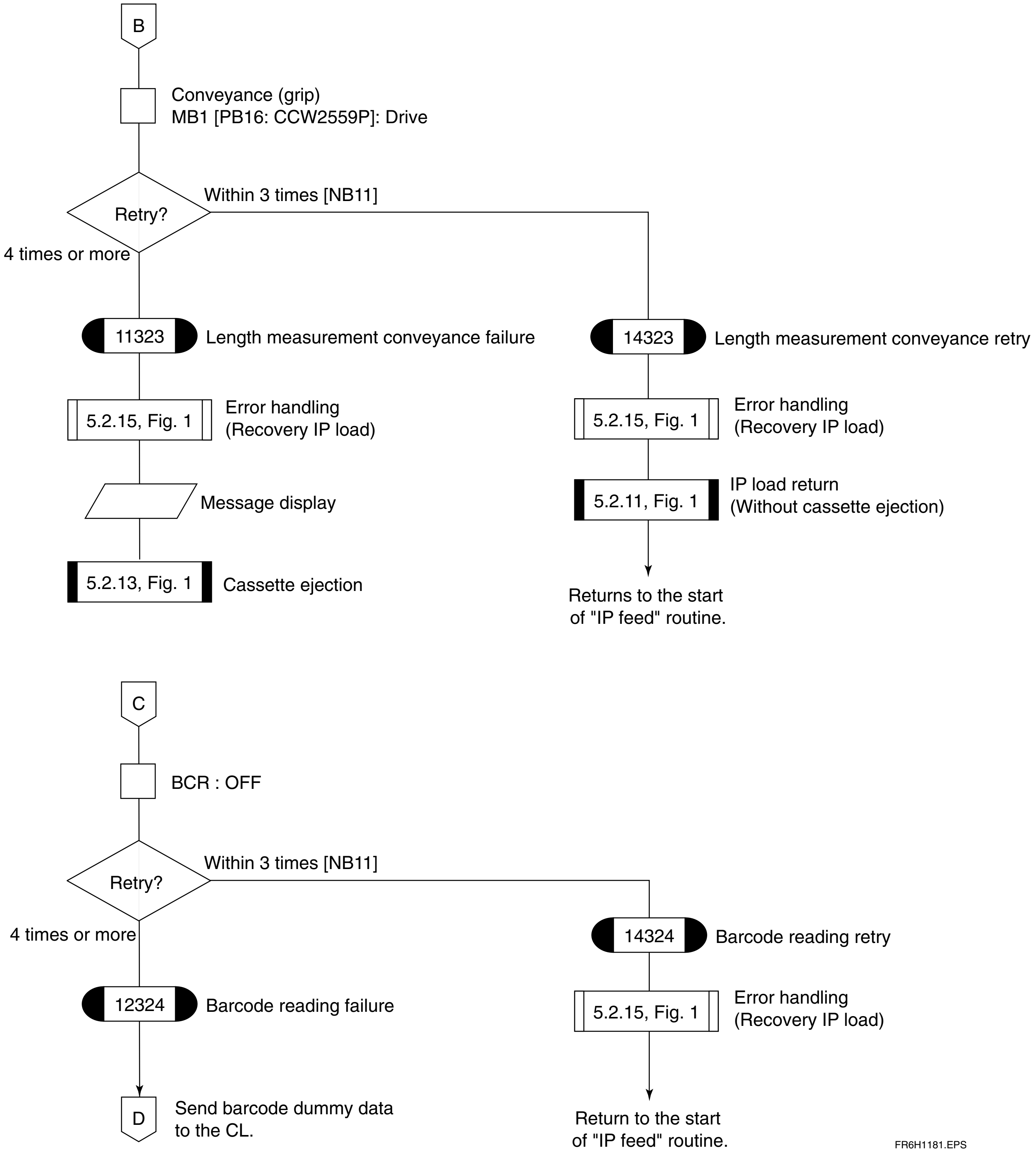
## <Fig. 1 Feed Conveyance Flow>


START
High-speed conveyance driving
MC3 [PC31: CW4375P]: Drive
MB1 [PB17: CW5250P]: Drive
MZ1 [V0: CCW212.8mm/s]: Drive
SB1 elapsed time count start
No BCR?
Available
Unavailable
Delay [TB18: 0.4sec]
BCR: ON
Close (IP found)
Timeout [TB12: within 3.5 sec]
SB1: Open?
Open
(No IP)
B
SB1 elapsed time count end
Measurement time
> 1.35 sec [TB15]
NO
YES
IP = 14x17
Measurement time
> 1.14 sec [TB14]
NO
YES
IP = 14x14
IP type
Metric
Inch
Measurement time
> 0.89 [TB13]
NO
YES
IP = 24-30
IP = 18-24
Measurement time
> 0.89 sec
[TB13]
NO
YES
IP = 8x12
IP = 8x10
IP
determination
A

FR6H1179.EPS

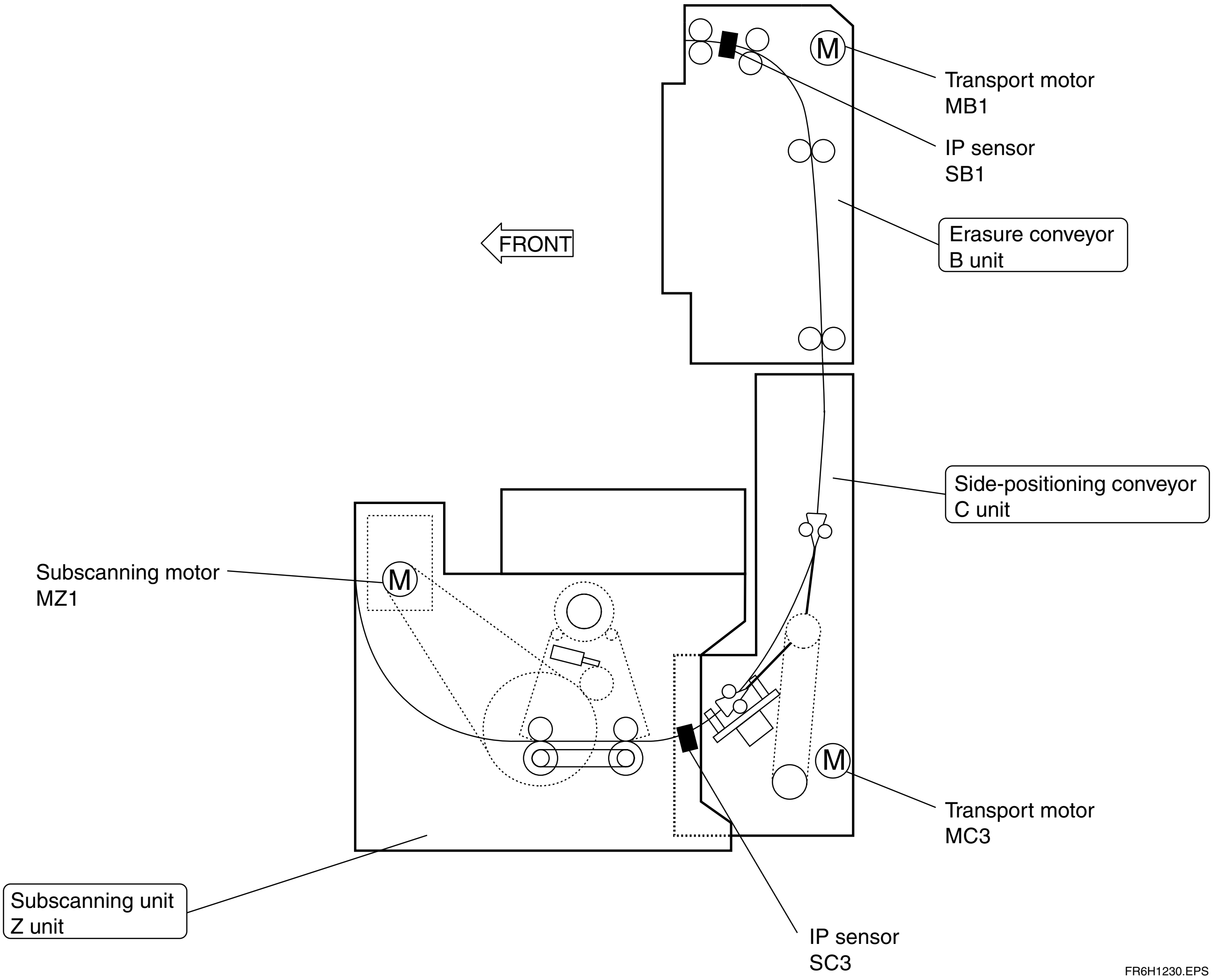

A
No BCR?
Available
Unavailable
BCR data acquired?
NG
(Not acquired)
OK
(Acquired)
IP generation?
Other than V or VI type
V or VI type
12388
IP with improper generation/type detected
Open
(No IP)
SC3: Close?
Open (No IP)
Timeout [TC31: within 2.8 sec]
Close
(IP found)
High-speed conveyance driving stop
MC3: OFF
MB1: OFF
Wait for MC3/MB1 stop
High-speed conveyance driving stop
MZ1: OFF
High-speed conveyance driving stop
MC3: OFF
MB1: OFF
Wait for MC3/MB1 stop
High-speed conveyance driving stop
MZ1: OFF
D
BCR data acquired?
NO
(Not acquired)
C
YES
(Acquired)
END
5.2.14, Fig. 2
Sensor confirmation 2 (SC3)
Retry?
Within 3 times [NB11]
4 times or more
11322
Feed conveyance failure
14322
Feed conveyance retry
5.2.15, Fig. 1
Error handling
(Recovery IP load)
5.2.15, Fig. 1
Error handling
(Recovery IP load)
Message display
Return to the start of "IP feed" routine.
5.2.16, Fig. 1
Cassette ejection
(after home positioning)

FR6H1180.EPS


B
Conveyance (grip)
MB1 [PB16: CCW2559P]: Drive
Retry?
Within 3 times [NB11]
4 times or more
11323
Length measurement conveyance failure
14323
Length measurement conveyance retry
5.2.15, Fig. 1
Error handling
(Recovery IP load)
5.2.15, Fig. 1
Error handling
(Recovery IP load)
Message display
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
5.2.13, Fig. 1
Cassette ejection
Returns to the start
of "IP feed" routine.
C
BCR : OFF
Retry?
Within 3 times [NB11]
4 times or more
14324
Barcode reading retry
12324
Barcode reading failure
5.2.15, Fig. 1
Error handling
(Recovery IP load)
D
Send barcode dummy data
to the CL.
Return to the start
of "IP feed" routine.

FR6H1181.EPS

## <I/O Locations>


Transport motor
MB1
IP sensor
SB1
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Subscanning motor
MZ1
M
Transport motor
MC3
Subscanning unit
Z unit
IP sensor
SC3
FR6H1230.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SC3 | Side-positioning IP sensor | PI (19mm) | Detects the IP. |
| SB1 | Cassette inlet IP sensor | PI (19mm) | Detects the IP. |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MZ1 | Subscanning motor | FFM | Conveys the IP. |

TR6H1076.EPS

## <Sensor ON/OFF Status>

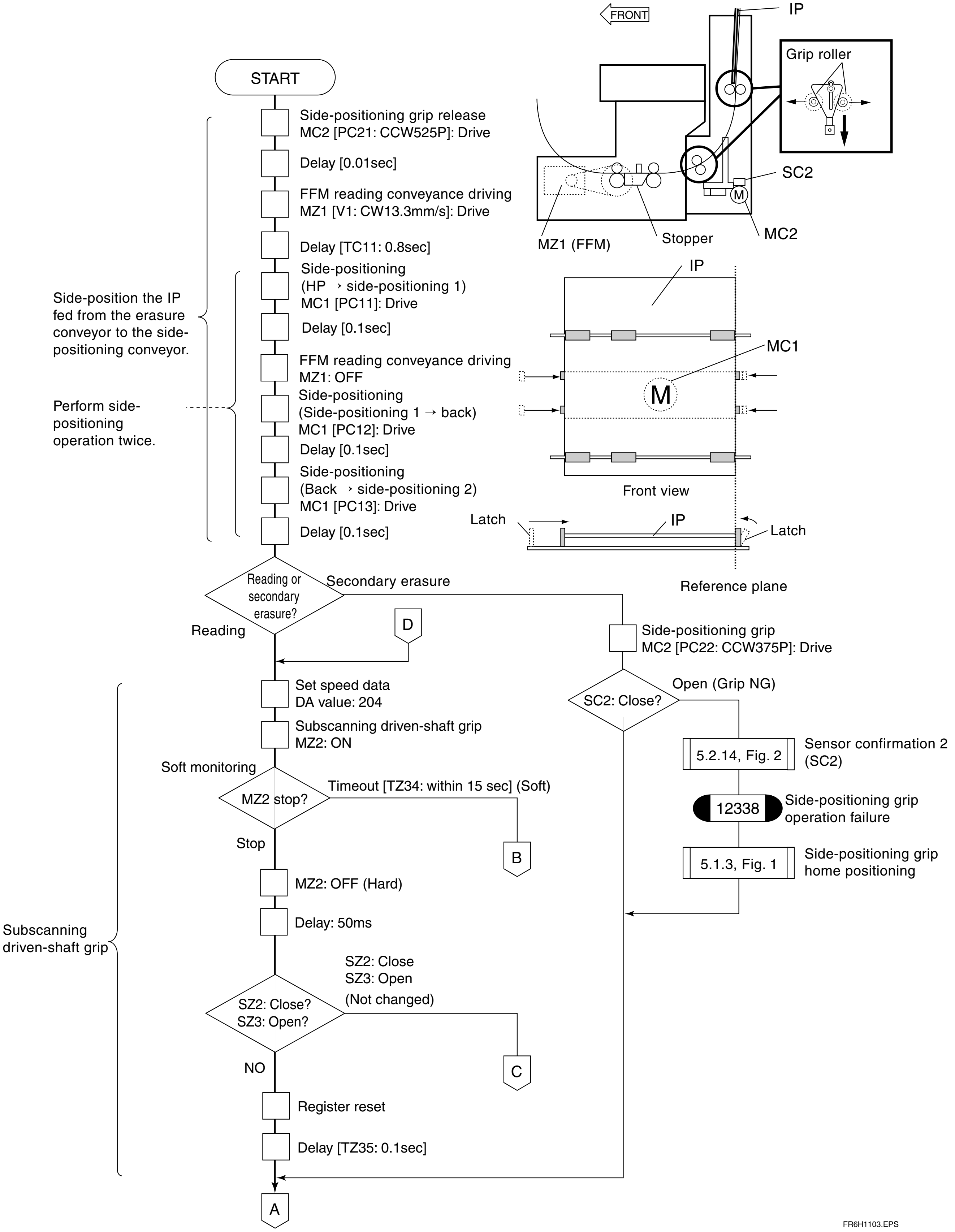
SC3/SB1

OFF: Open (no IP)    ON: Close (IP found)

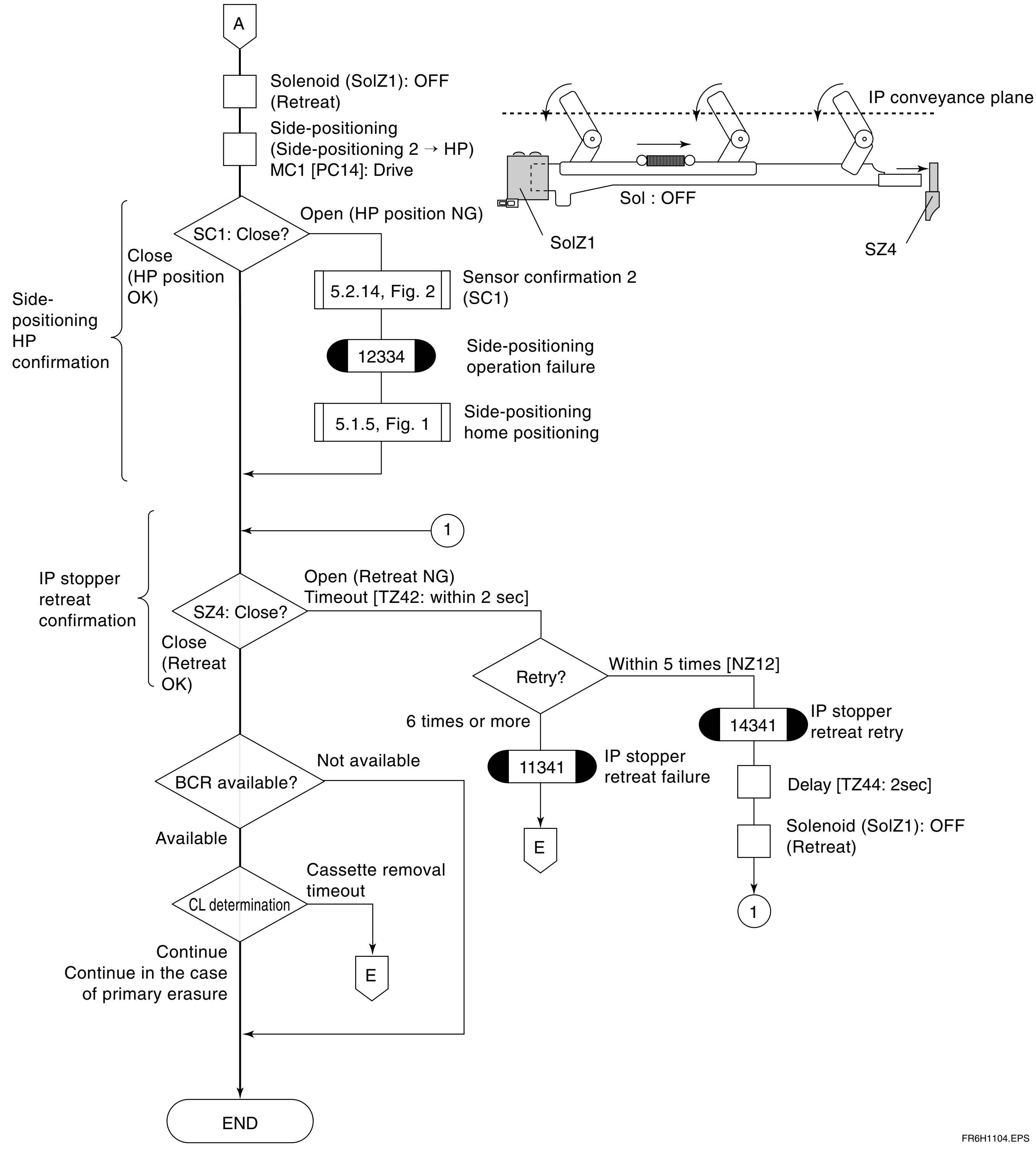
FR6H1255.EPS

## 5.2.4 Side-Positioning Operation

## <Fig. 1 Side-Positioning Flow>


FRONT
IP
Grip roller
SC2
MC2
MZ1 (FFM)
Stopper
M
START
Side-positioning grip release
MC2 [PC21: CCW525P]: Drive
Delay [0.01sec]
FFM reading conveyance driving
MZ1 [V1: CW13.3mm/s]: Drive
Delay [TC11: 0.8sec]
Side-positioning
(HP → side-positioning 1)
MC1 [PC11]: Drive
Delay [0.1sec]
FFM reading conveyance driving
MZ1: OFF
Side-positioning
(Side-positioning 1 → back)
MC1 [PC12]: Drive
Delay [0.1sec]
Side-positioning
(Back → side-positioning 2)
MC1 [PC13]: Drive
Delay [0.1sec]
Side-position the IP fed from the erasure conveyor to the side-positioning conveyor.
Perform side-positioning operation twice.
IP
MC1
M
Front view
Latch
IP
Latch
Reference plane
Reading or secondary erasure?
Secondary erasure
Reading
D
Side-positioning grip
MC2 [PC22: CCW375P]: Drive
SC2: Close?
Open (Grip NG)
5.2.14, Fig. 2
Sensor confirmation 2 (SC2)
12338
Side-positioning grip operation failure
5.1.3, Fig. 1
Side-positioning grip home positioning
Set speed data
DA value: 204
Subscanning driven-shaft grip
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Stop
B
MZ2: OFF (Hard)
Delay: 50ms
Subscanning driven-shaft grip
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
C
Register reset
Delay [TZ35: 0.1sec]
A

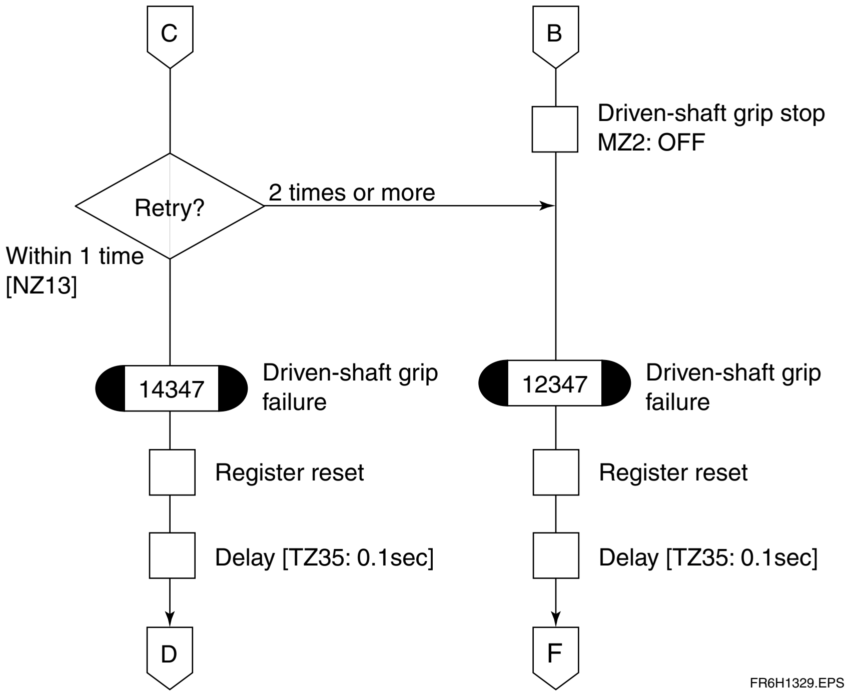
FR6H1103.EPS

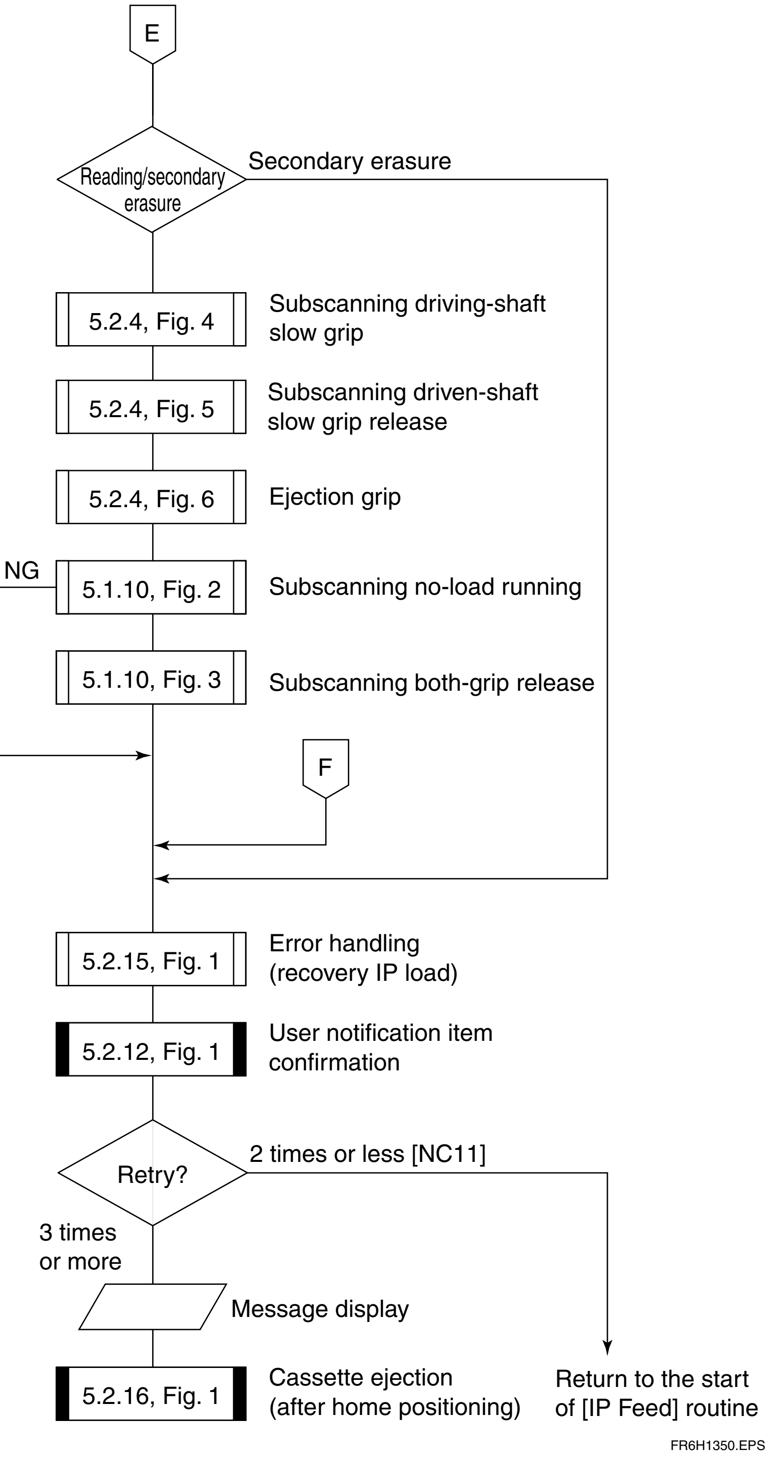

A
Solenoid (SolZ1): OFF
(Retreat)
Side-positioning
(Side-positioning 2 → HP)
MC1 [PC14]: Drive
IP conveyance plane
Sol : OFF
SolZ1
SZ4
SC1: Close?
Open (HP position NG)
Close
(HP position
OK)
Side-
positioning
HP
confirmation
5.2.14, Fig. 2
Sensor confirmation 2
(SC1)
12334
Side-positioning
operation failure
5.1.5, Fig. 1
Side-positioning
home positioning
1
IP stopper
retreat
confirmation
SZ4: Close?
Open (Retreat NG)
Timeout [TZ42: within 2 sec]
Close
(Retreat
OK)
Retry?
Within 5 times [NZ12]
6 times or more
14341
IP stopper
retreat retry
11341
IP stopper
retreat failure
E
Delay [TZ44: 2sec]
Solenoid (SolZ1): OFF
(Retreat)
1
BCR available?
Not available
Available
CL determination
Cassette removal
timeout
E
Continue
Continue in the case
of primary erasure
END

FR6H1104.EPS

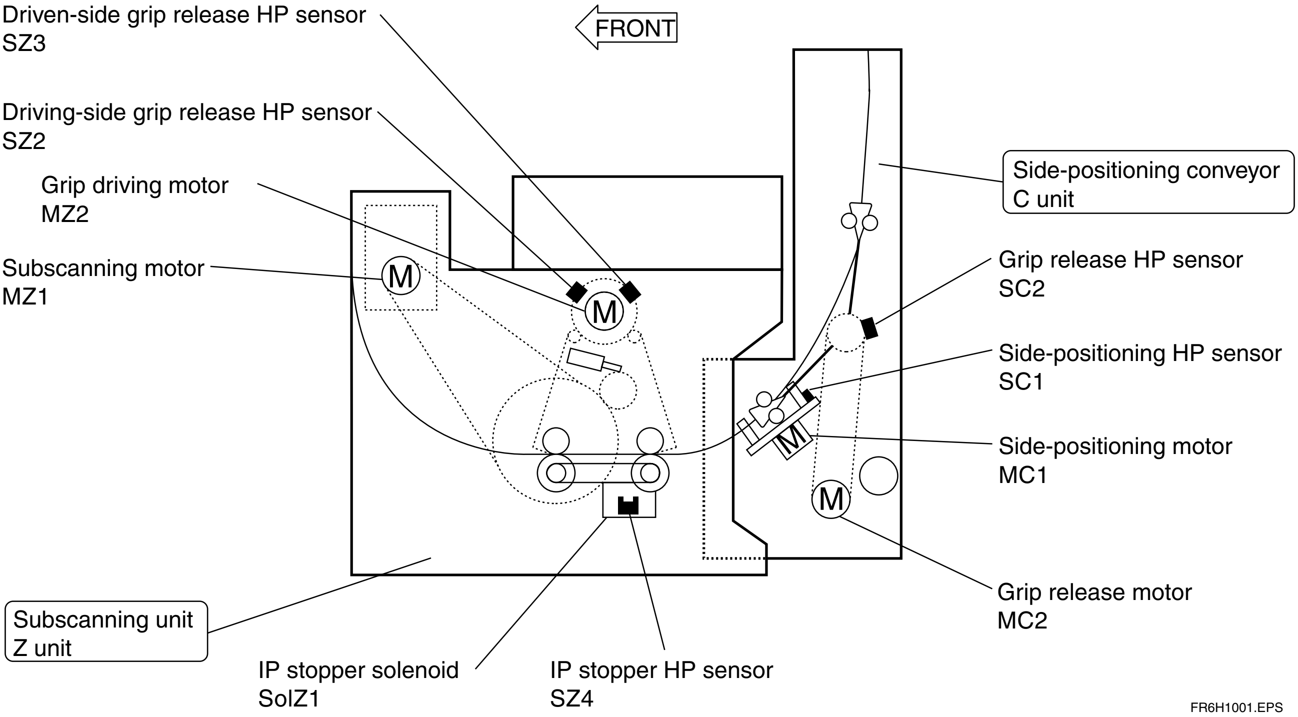
| Symbol | Operation | IP size | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14x17 | 14x14 | 10x12 | 8x10 | Metric 18x24 | Metric 24x30 |
| PC11 | Side-positioning (HP → side-positioning 1) | CCW177P | CCW177P | CCW617P | CCW617P | CCW730P | CCW730P |
| PC12 | Side-positioning (Side-positioning 1 → back) | CW39P | CW39P | CW32P | CW32P | CW60P | CW60P |
| PC13 | Side-positioning (Back → side-positioning 2) | CCW39P | CCW39P | CCW32P | CCW32P | CCW60P | CCW60P |
| PC14 | Side-positioning (Side-positioning 2 → HP) | CW177P | CW177P | CW617P | CW617P | CW730P | CW730P |

TR6H1055.EPS


C
B
Driven-shaft grip stop
MZ2: OFF
Retry?
2 times or more
Within 1 time
[NZ13]
14347
Driven-shaft grip
failure
12347
Driven-shaft grip
failure
Register reset
Register reset
Delay [TZ35: 0.1sec]
Delay [TZ35: 0.1sec]
D
F
FR6H1329.EPS


E
Reading/secondary erasure
Secondary erasure
5.2.4, Fig. 4
Subscanning driving-shaft slow grip
5.2.4, Fig. 5
Subscanning driven-shaft slow grip release
5.2.4, Fig. 6
Ejection grip
NG
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
F
5.2.15, Fig. 1
Error handling (recovery IP load)
5.2.12, Fig. 1
User notification item confirmation
Retry?
2 times or less [NC11]
3 times or more
Message display
5.2.16, Fig. 1
Cassette ejection (after home positioning)
Return to the start of [IP Feed] routine
FR6H1350.EPS

## <I/O Locations>


Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
Subscanning motor
MZ1
FRONT
M
M
M
M
Side-positioning conveyor
C unit
Grip release HP sensor
SC2
Side-positioning HP sensor
SC1
Side-positioning motor
MC1
Grip release motor
MC2
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4
FR6H1001.EPS

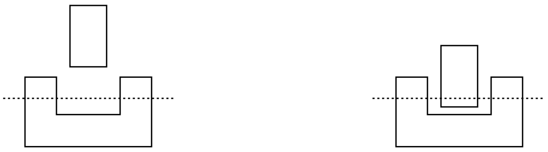
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SC1 | Side-positioning HP sensor | PI (5mm) | Detects that it is in the side-positioning home position. |
| SC2 | Grip release HP sensor | PI (5mm) | Detects that it is in the grip release home position. |
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| SZ4 | IP stopper HP sensor | PI (5mm) | Detects that it is in the IP stopper home position. |
| SolZ1 | IP stopper driving SOL | Power-down solenoid | Protrudes the IP stopper when turned ON. |
| MC1 | Side-positioning motor | Pulse motor | Drives the side-positioning mechanism. |
| MC2 | Grip release motor | Pulse motor | Drives to release the grip. |
| MZ1 | Subscanning motor | FFM | Drives to convey the IP. |
| MZ2 | Grip driving motor | DC motor | Drives the driven-shaft grip. |

TR6H1056.EPS

## <Sensor ON/OFF Status>

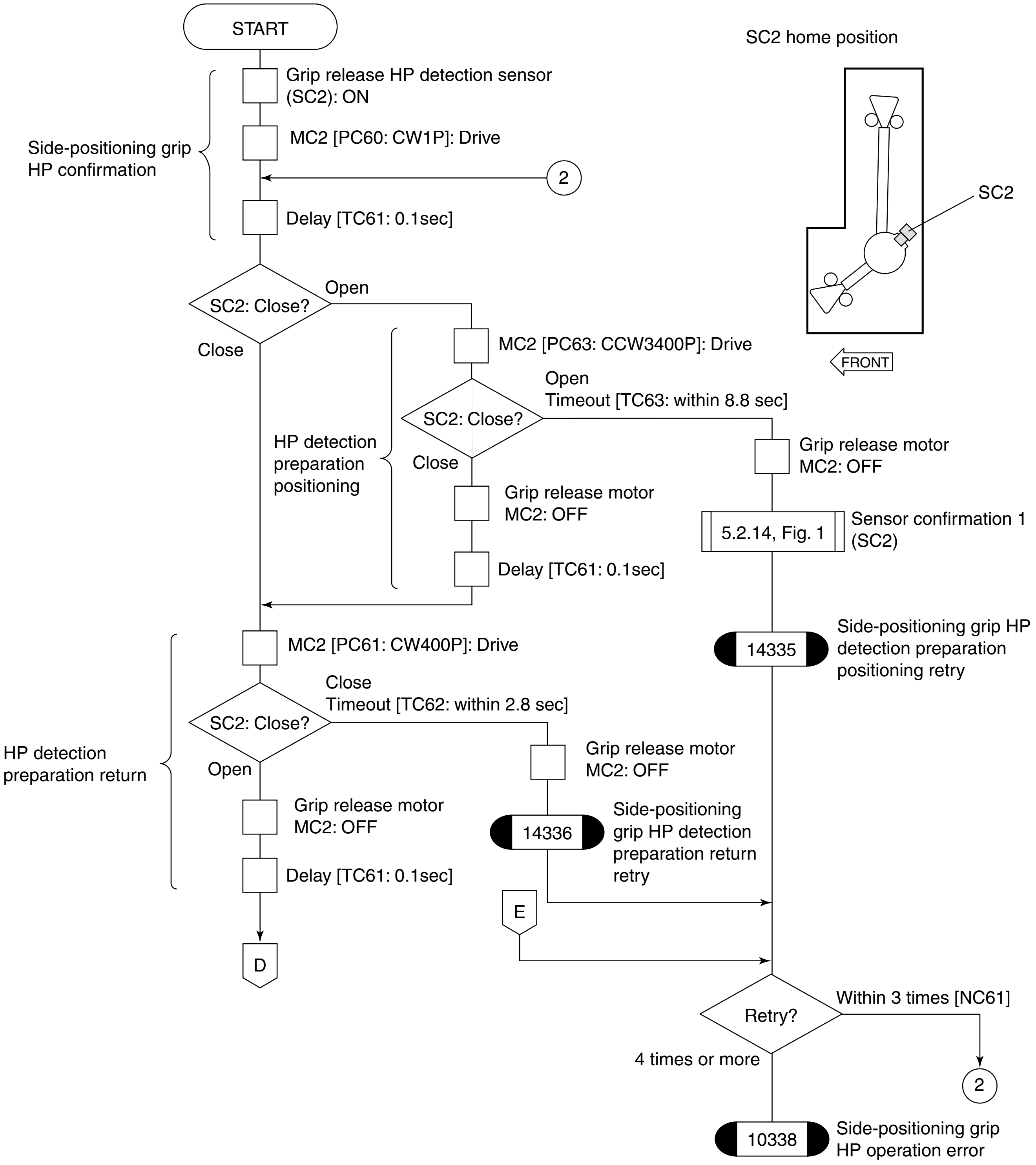
SC1/SC2/SZ2/SZ3/SZ4

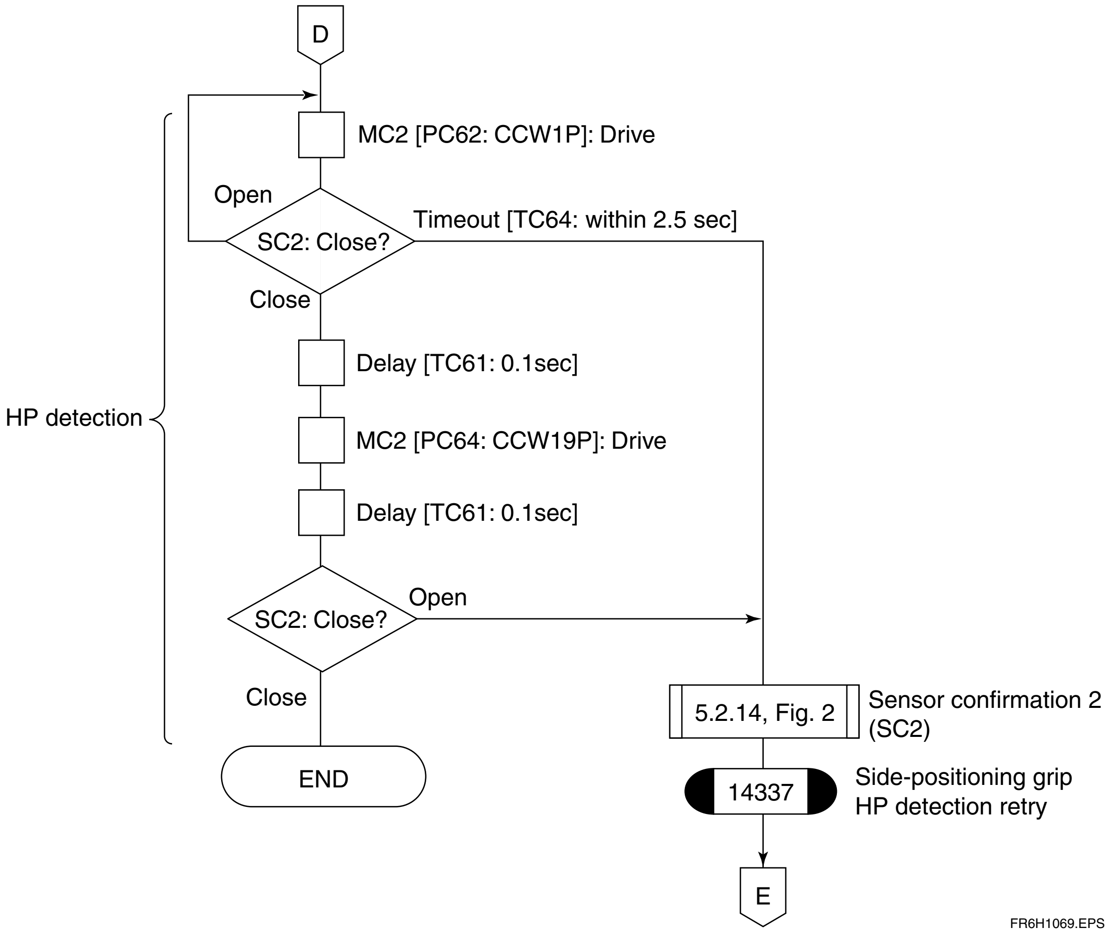


OFF: Open (not blocked)    ON: Close (blocked)

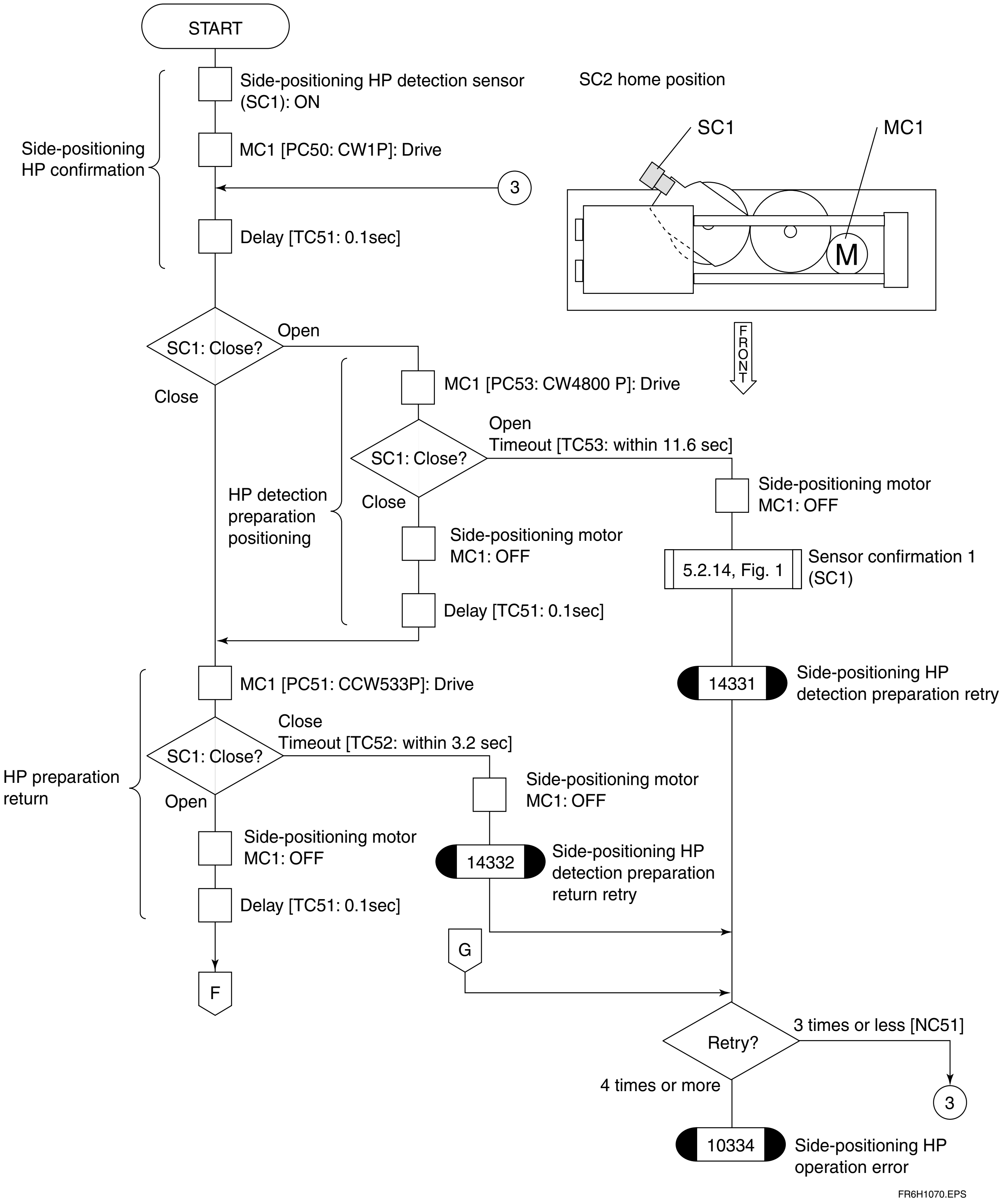
FR6H1067.EPS

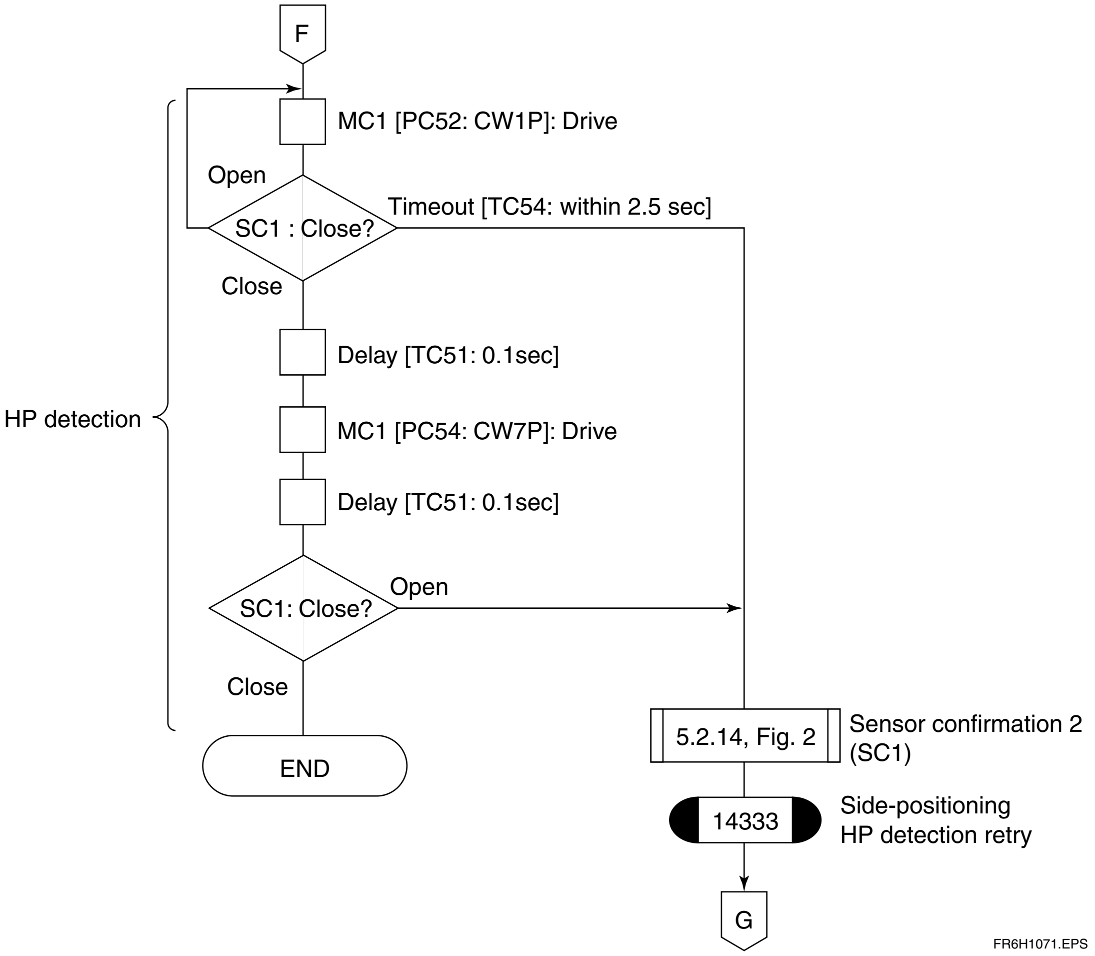
## <Fig. 2 Side-Positioning Grip Home Positioning Flow>


START
Grip release HP detection sensor (SC2): ON
MC2 [PC60: CW1P]: Drive
Side-positioning grip HP confirmation
2
Delay [TC61: 0.1sec]
SC2: Close?
Open
Close
MC2 [PC63: CCW3400P]: Drive
SC2: Close?
Open
Timeout [TC63: within 8.8 sec]
HP detection preparation positioning
Close
Grip release motor MC2: OFF
Delay [TC61: 0.1sec]
Grip release motor MC2: OFF
5.2.14, Fig. 1
Sensor confirmation 1 (SC2)
14335
Side-positioning grip HP detection preparation positioning retry
MC2 [PC61: CW400P]: Drive
SC2: Close?
Close
Timeout [TC62: within 2.8 sec]
HP detection preparation return
Open
Grip release motor MC2: OFF
Grip release motor MC2: OFF
14336
Side-positioning grip HP detection preparation return retry
Delay [TC61: 0.1sec]
E
D
Retry?
Within 3 times [NC61]
4 times or more
2
10338
Side-positioning grip HP operation error
SC2 home position
SC2
FRONT
FR6H1068.EPS

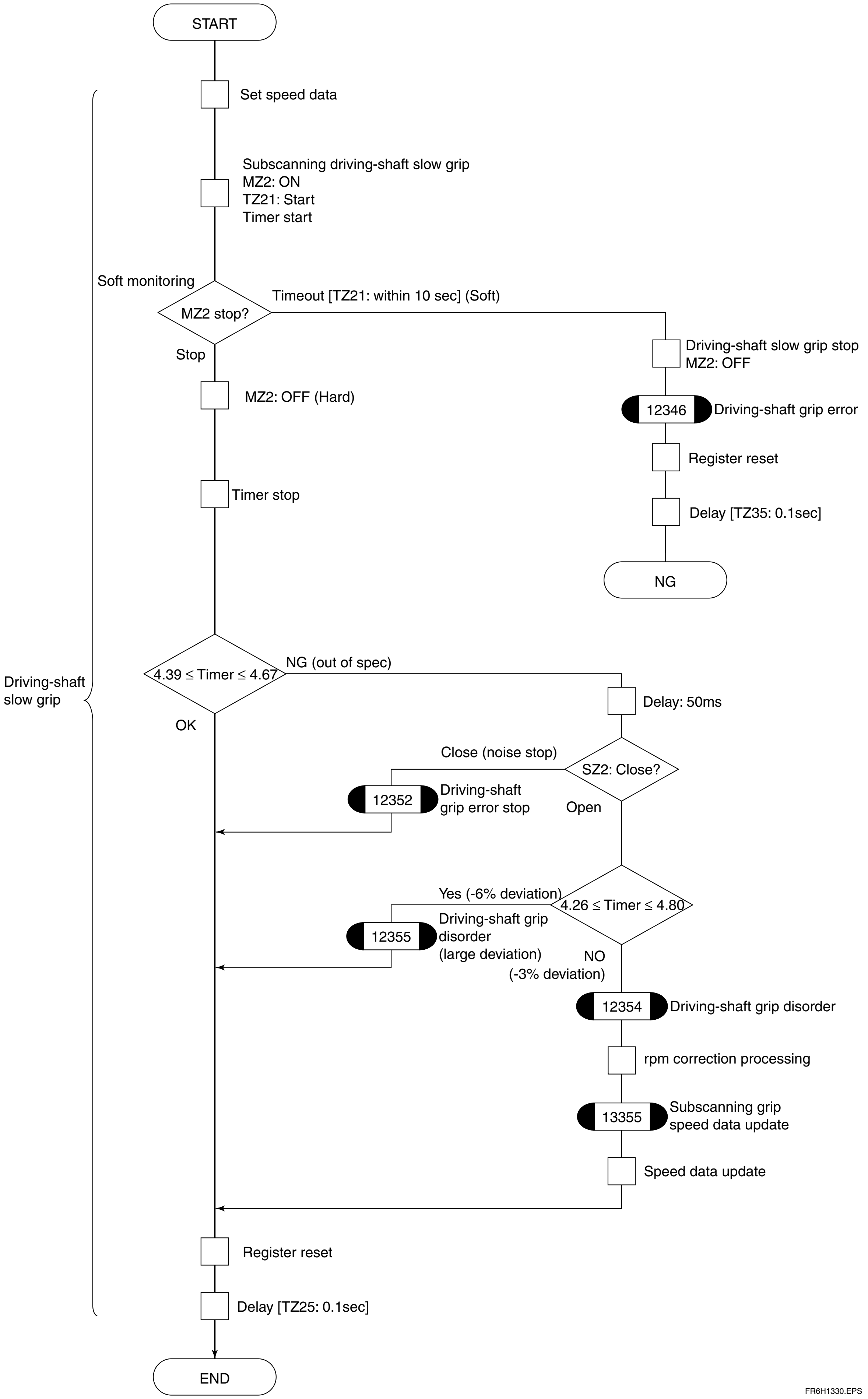

D
MC2 [PC62: CCW1P]: Drive
Open
SC2: Close?
Timeout [TC64: within 2.5 sec]
Close
Delay [TC61: 0.1sec]
HP detection
MC2 [PC64: CCW19P]: Drive
Delay [TC61: 0.1sec]
Open
SC2: Close?
Close
5.2.14, Fig. 2
Sensor confirmation 2
(SC2)
END
14337
Side-positioning grip
HP detection retry
E
FR6H1069.EPS

## <Fig. 3 Side-Positioning Home Positioning Flow>


START
Side-positioning HP confirmation
Side-positioning HP detection sensor (SC1): ON
MC1 [PC50: CW1P]: Drive
3
Delay [TC51: 0.1sec]
SC2 home position
SC1
MC1
M
FRONT
SC1: Close?
Open
Close
HP detection preparation positioning
MC1 [PC53: CW4800 P]: Drive
SC1: Close?
Open
Timeout [TC53: within 11.6 sec]
Close
Side-positioning motor MC1: OFF
Delay [TC51: 0.1sec]
Side-positioning motor MC1: OFF
5.2.14, Fig. 1
Sensor confirmation 1 (SC1)
14331
Side-positioning HP detection preparation retry
HP preparation return
MC1 [PC51: CCW533P]: Drive
SC1: Close?
Close
Timeout [TC52: within 3.2 sec]
Open
Side-positioning motor MC1: OFF
Side-positioning motor MC1: OFF
Delay [TC51: 0.1sec]
14332
Side-positioning HP detection preparation return retry
G
F
Retry?
3 times or less [NC51]
4 times or more
3
10334
Side-positioning HP operation error
FR6H1070.EPS

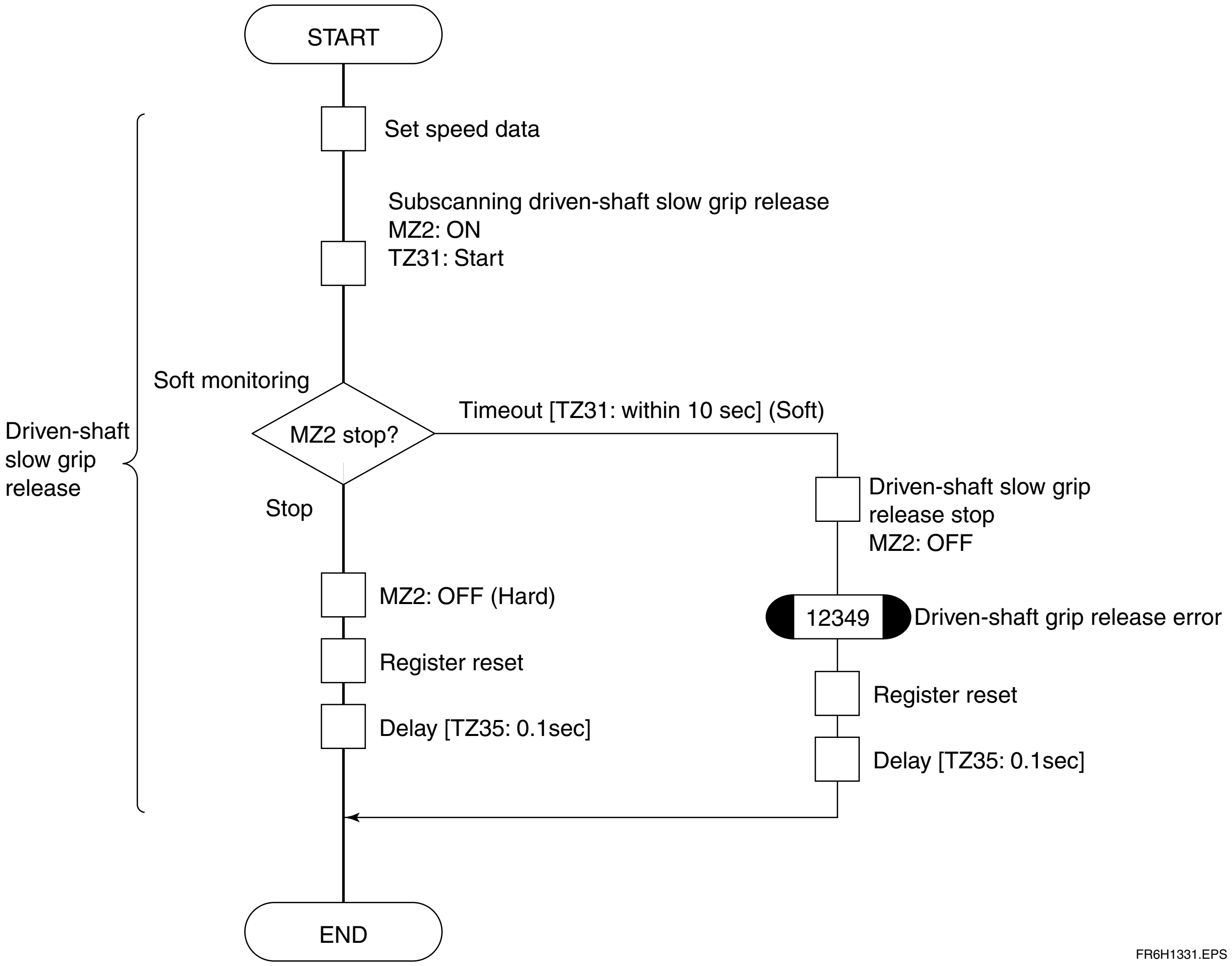

F
MC1 [PC52: CW1P]: Drive
Open
SC1 : Close?
Timeout [TC54: within 2.5 sec]
Close
Delay [TC51: 0.1sec]
HP detection
MC1 [PC54: CW7P]: Drive
Delay [TC51: 0.1sec]
SC1: Close?
Open
Close
END
5.2.14, Fig. 2
Sensor confirmation 2
(SC1)
14333
Side-positioning
HP detection retry
G
FR6H1071.EPS

## <Fig. 4 Subscanning Driving-shaft Slow Grip Flow>

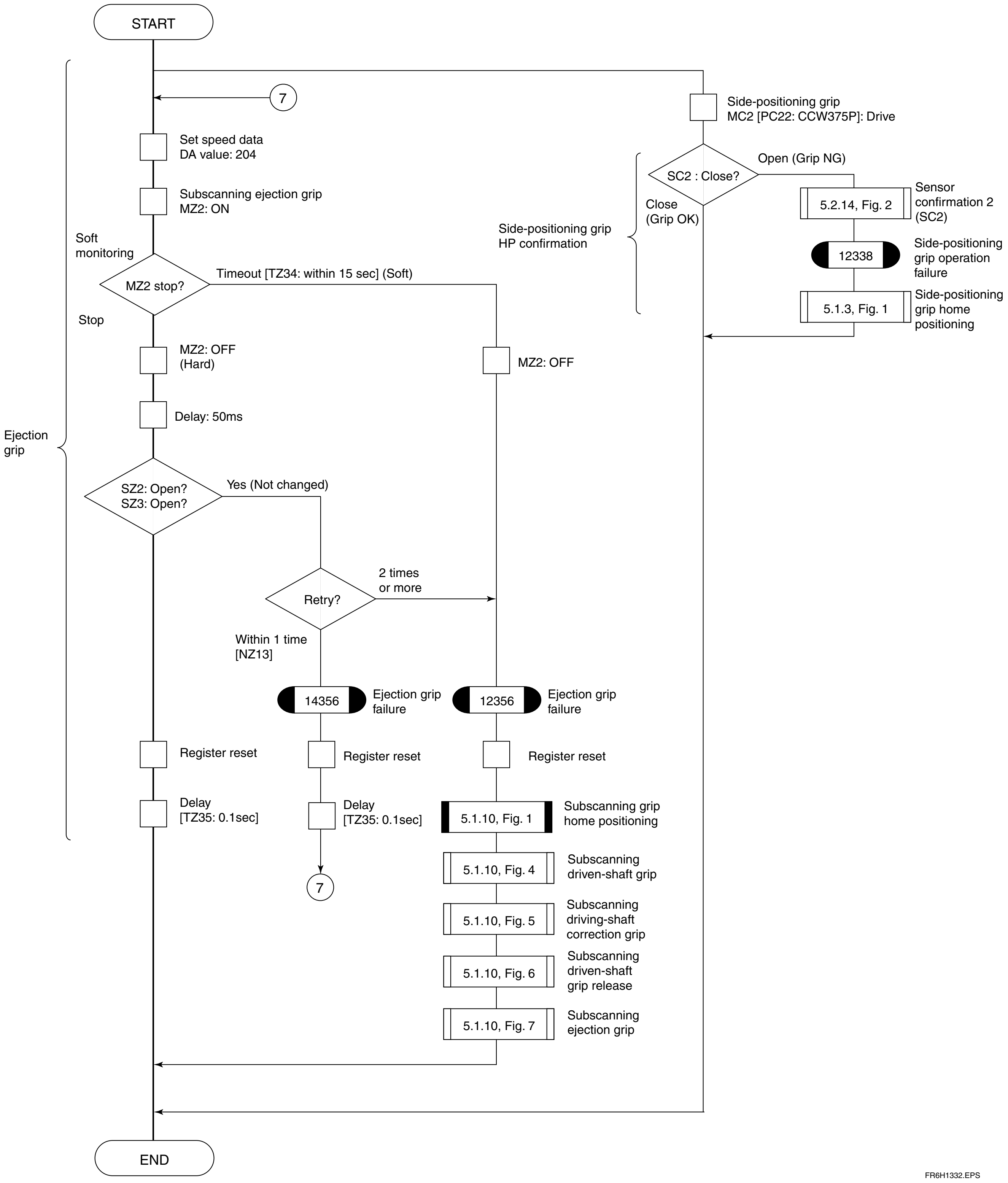

START
Set speed data
Subscanning driving-shaft slow grip
MZ2: ON
TZ21: Start
Timer start
Soft monitoring
MZ2 stop?
Timeout [TZ21: within 10 sec] (Soft)
Stop
Driving-shaft slow grip stop
MZ2: OFF
MZ2: OFF (Hard)
12346
Driving-shaft grip error
Register reset
Timer stop
Delay [TZ35: 0.1sec]
NG
4.39 ≤ Timer ≤ 4.67
NG (out of spec)
Driving-shaft
slow grip
Delay: 50ms
OK
Close (noise stop)
SZ2: Close?
12352
Driving-shaft
grip error stop
Open
Yes (-6% deviation)
4.26 ≤ Timer ≤ 4.80
12355
Driving-shaft grip
disorder
(large deviation)
NO
(-3% deviation)
12354
Driving-shaft grip disorder
rpm correction processing
13355
Subscanning grip
speed data update
Speed data update
Register reset
Delay [TZ25: 0.1sec]
END

FR6H1330.EPS

## <Fig. 5 Subscanning Driven-Shaft Slow Grip Release Flow>

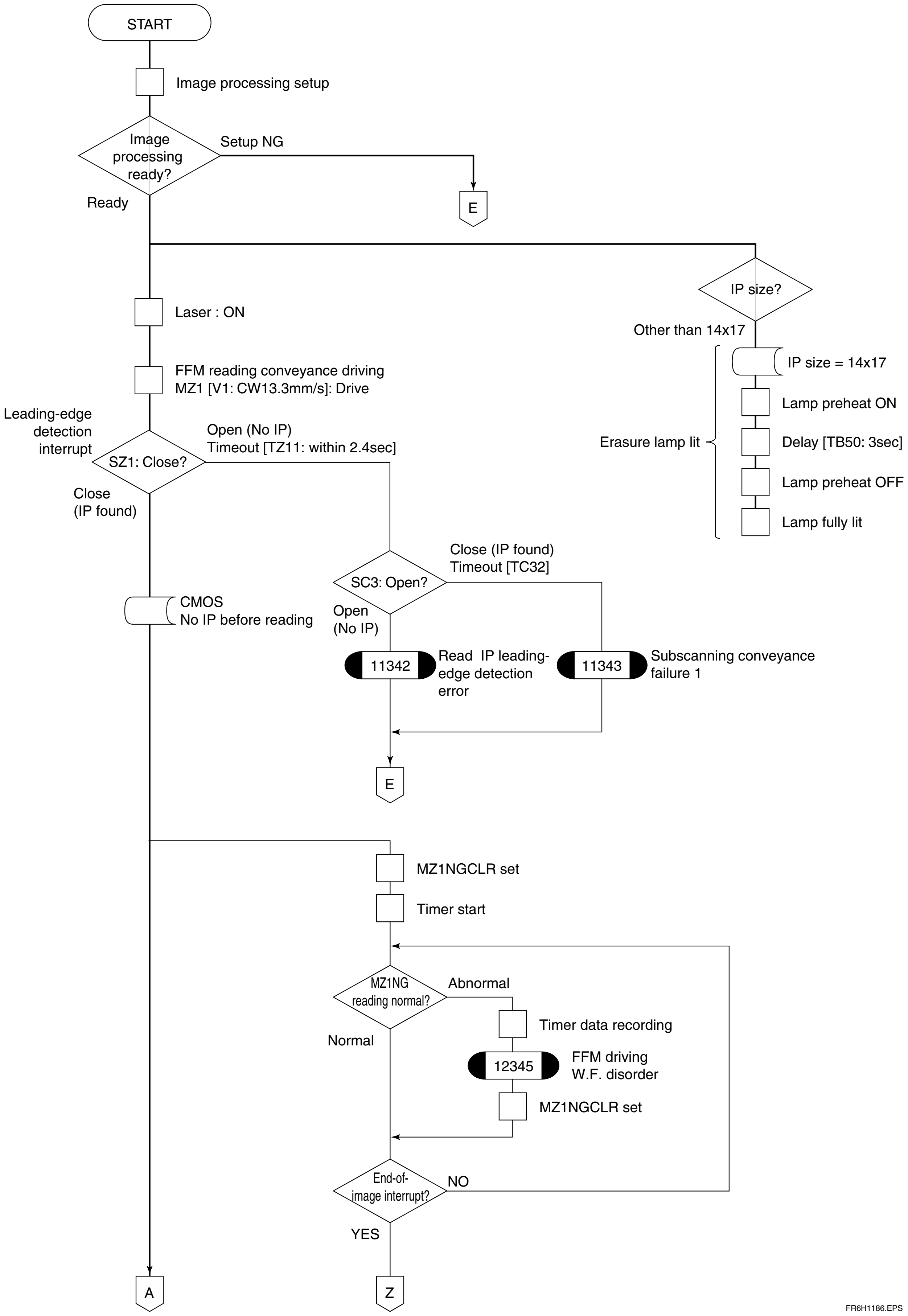

START
Set speed data
Subscanning driven-shaft slow grip release
MZ2: ON
TZ31: Start
Soft monitoring
Driven-shaft
slow grip
release
MZ2 stop?
Timeout [TZ31: within 10 sec] (Soft)
Stop
Driven-shaft slow grip
release stop
MZ2: OFF
MZ2: OFF (Hard)
12349
Driven-shaft grip release error
Register reset
Delay [TZ35: 0.1sec]
Register reset
Delay [TZ35: 0.1sec]
END
FR6H1331.EPS

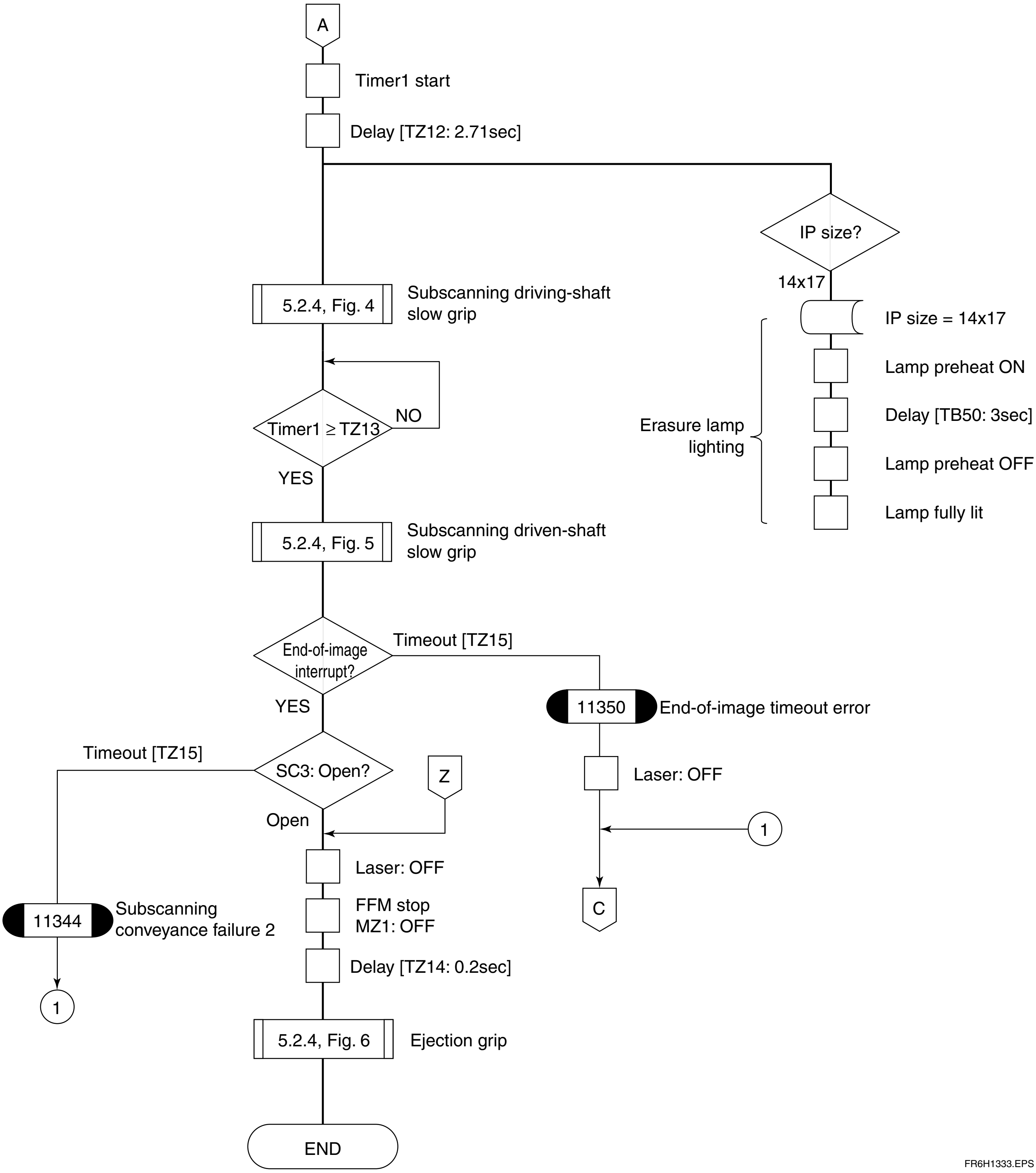
## <Fig. 6 Ejection Grip Flow>


START
7
Set speed data
DA value: 204
Subscanning ejection grip
MZ2: ON
Soft
monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Stop
MZ2: OFF
(Hard)
MZ2: OFF
Delay: 50ms
Ejection
grip
SZ2: Open?
SZ3: Open?
Yes (Not changed)
Retry?
2 times
or more
Within 1 time
[NZ13]
14356
Ejection grip
failure
12356
Ejection grip
failure
Register reset
Register reset
Register reset
Delay
[TZ35: 0.1sec]
Delay
[TZ35: 0.1sec]
7
5.1.10, Fig. 1
Subscanning grip
home positioning
5.1.10, Fig. 4
Subscanning
driven-shaft grip
5.1.10, Fig. 5
Subscanning
driving-shaft
correction grip
5.1.10, Fig. 6
Subscanning
driven-shaft
grip release
5.1.10, Fig. 7
Subscanning
ejection grip
Side-positioning grip
MC2 [PC22: CCW375P]: Drive
SC2 : Close?
Open (Grip NG)
Close
(Grip OK)
Side-positioning grip
HP confirmation
5.2.14, Fig. 2
Sensor
confirmation 2
(SC2)
12338
Side-positioning
grip operation
failure
5.1.3, Fig. 1
Side-positioning
grip home
positioning
END
FR6H1332.EPS

## 5.2.5 Reading

## <Fig. 1 Reading Flow>

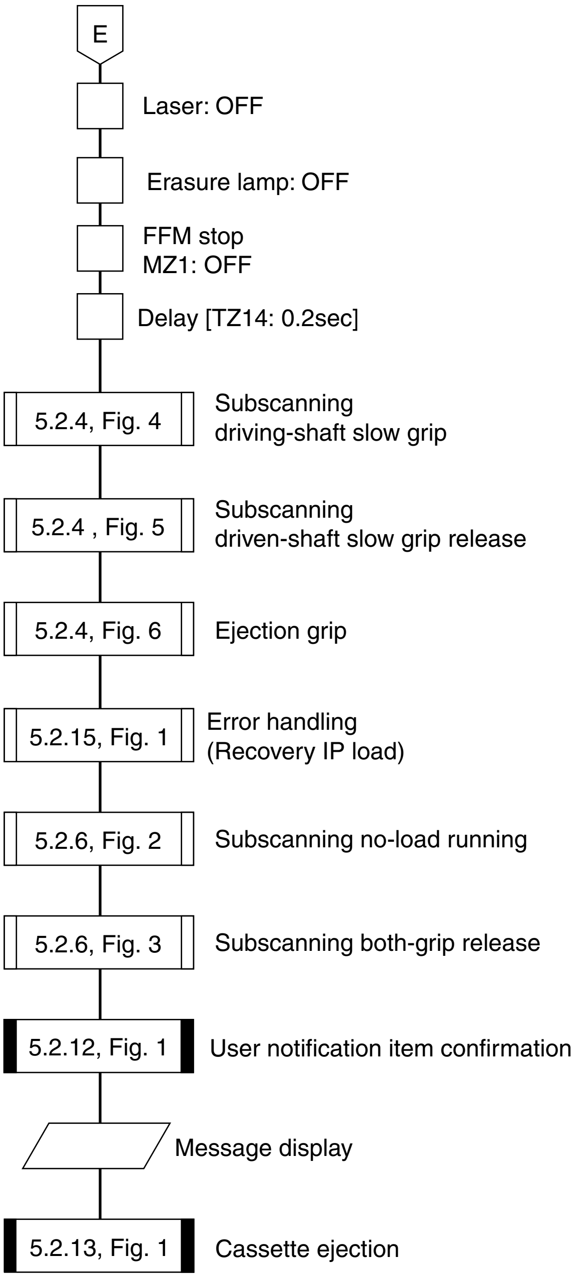

START
Image processing setup
Image processing ready?
Setup NG
E
Ready
IP size?
Other than 14x17
IP size = 14x17
Lamp preheat ON
Erasure lamp lit
Delay [TB50: 3sec]
Lamp preheat OFF
Lamp fully lit
Laser : ON
FFM reading conveyance driving
MZ1 [V1: CW13.3mm/s]: Drive
Leading-edge detection interrupt
SZ1: Close?
Open (No IP)
Timeout [TZ11: within 2.4sec]
Close (IP found)
SC3: Open?
Close (IP found)
Timeout [TC32]
CMOS
No IP before reading
Open (No IP)
11342
Read IP leading-edge detection error
11343
Subscanning conveyance failure 1
E
MZ1NGCLR set
Timer start
MZ1NG reading normal?
Abnormal
Timer data recording
12345
FFM driving W.F. disorder
MZ1NGCLR set
Normal
End-of-image interrupt?
NO
YES
A
Z
FR6H1186.EPS


A
Timer1 start
Delay [TZ12: 2.71sec]
IP size?
14x17
IP size = 14x17
Lamp preheat ON
Delay [TB50: 3sec]
Lamp preheat OFF
Lamp fully lit
Erasure lamp lighting
5.2.4, Fig. 4
Subscanning driving-shaft slow grip
Timer1 ≥ TZ13
NO
YES
5.2.4, Fig. 5
Subscanning driven-shaft slow grip
End-of-image interrupt?
Timeout [TZ15]
YES
11350
End-of-image timeout error
Laser: OFF
1
C
Timeout [TZ15]
SC3: Open?
Z
Open
Laser: OFF
FFM stop
MZ1: OFF
Delay [TZ14: 0.2sec]
11344
Subscanning conveyance failure 2
1
5.2.4, Fig. 6
Ejection grip
END

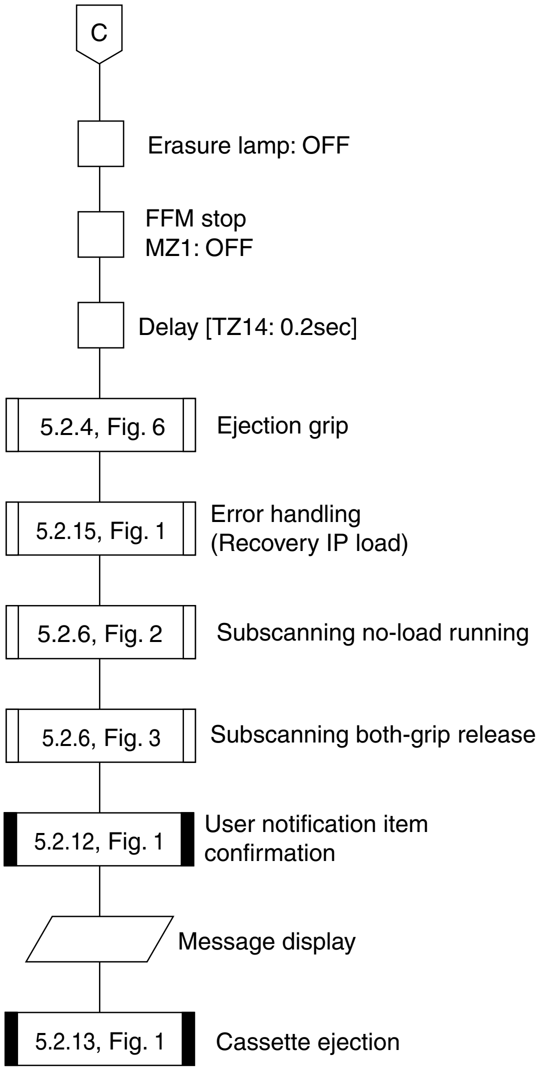
FR6H1333.EPS

| Symbol | Operation | IP size | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14x17 | 14x14 | 10x12 | 8x10 | Metric 18x24 | Metric 24x30 |
| TC32 | Read IP trailing-edge detection timeout | 31.7 sec | 26.0 sec | 22.1 sec | 14.5 sec | 12.7 sec | 21.8 sec |
| TZ13 | Driven-shaft grip release start | 26.27 sec | 20.55 sec | 16.72 sec | 9.05 sec | 7.32 sec | 16.34 sec |
| TZ15 | XXXXXX | 34.3 sec | 28.6 sec | 24.8 sec | 17.1 sec | 15.4 sec | 24.4 sec |

TR6H1090.EPS

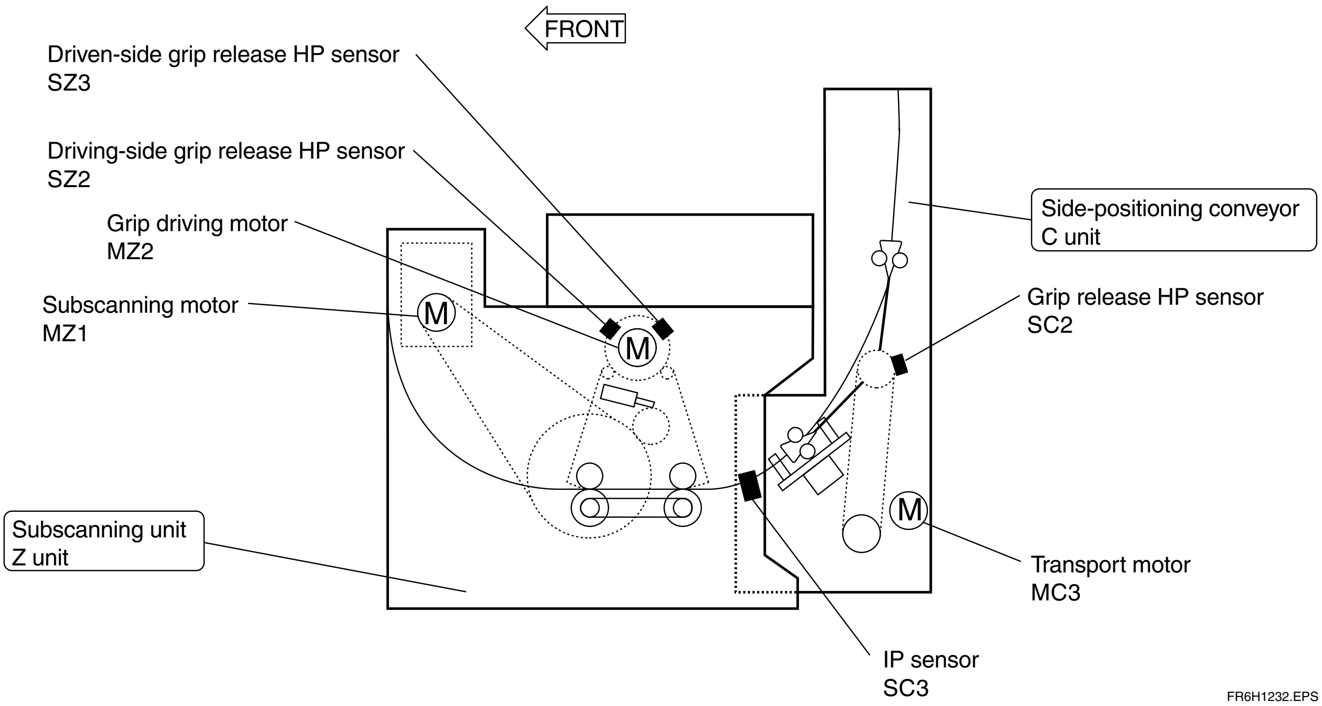

E
Laser: OFF
Erasure lamp: OFF
FFM stop
MZ1: OFF
Delay [TZ14: 0.2sec]
5.2.4, Fig. 4
Subscanning
driving-shaft slow grip
5.2.4 , Fig. 5
Subscanning
driven-shaft slow grip release
5.2.4, Fig. 6
Ejection grip
5.2.15, Fig. 1
Error handling
(Recovery IP load)
5.2.6, Fig. 2
Subscanning no-load running
5.2.6, Fig. 3
Subscanning both-grip release
5.2.12, Fig. 1
User notification item confirmation
Message display
5.2.13, Fig. 1
Cassette ejection

FR6H1334.EPS


C
Erasure lamp: OFF
FFM stop
MZ1: OFF
Delay [TZ14: 0.2sec]
5.2.4, Fig. 6
Ejection grip
5.2.15, Fig. 1
Error handling
(Recovery IP load)
5.2.6, Fig. 2
Subscanning no-load running
5.2.6, Fig. 3
Subscanning both-grip release
5.2.12, Fig. 1
User notification item
confirmation
Message display
5.2.13, Fig. 1
Cassette ejection

FR6H1335.EPS

## <I/O Locations>

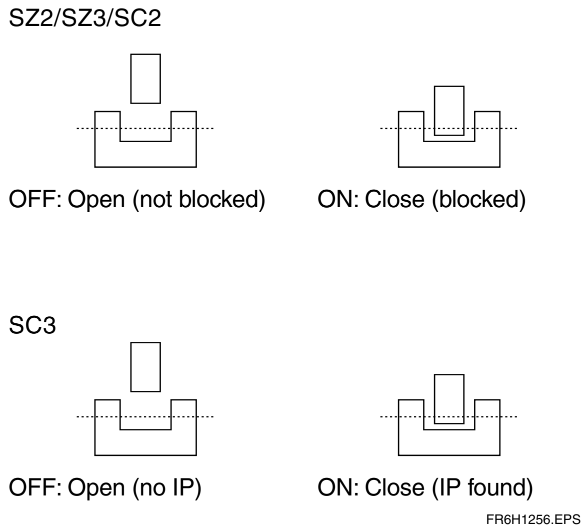

FRONT
Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
Subscanning motor
MZ1
Subscanning unit
Z unit
M
M
M
Side-positioning conveyor
C unit
Grip release HP sensor
SC2
Transport motor
MC3
IP sensor
SC3
FR6H1232.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MZ1 | Subscanning motor | FFM | Conveys the IP. |
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| SC2 | Grip release HP sensor | PI (5mm) | Detects that it is in the grip release home position. |
| SC3 | Side-positioning IP sensor | PI (19mm) | Detects the IP. |

TR6H1085.EPS

## <Sensor ON/OFF Status>


SZ2/SZ3/SC2
OFF: Open (not blocked)
ON: Close (blocked)
SC3
OFF: Open (no IP)
ON: Close (IP found)
FR6H1256.EPS

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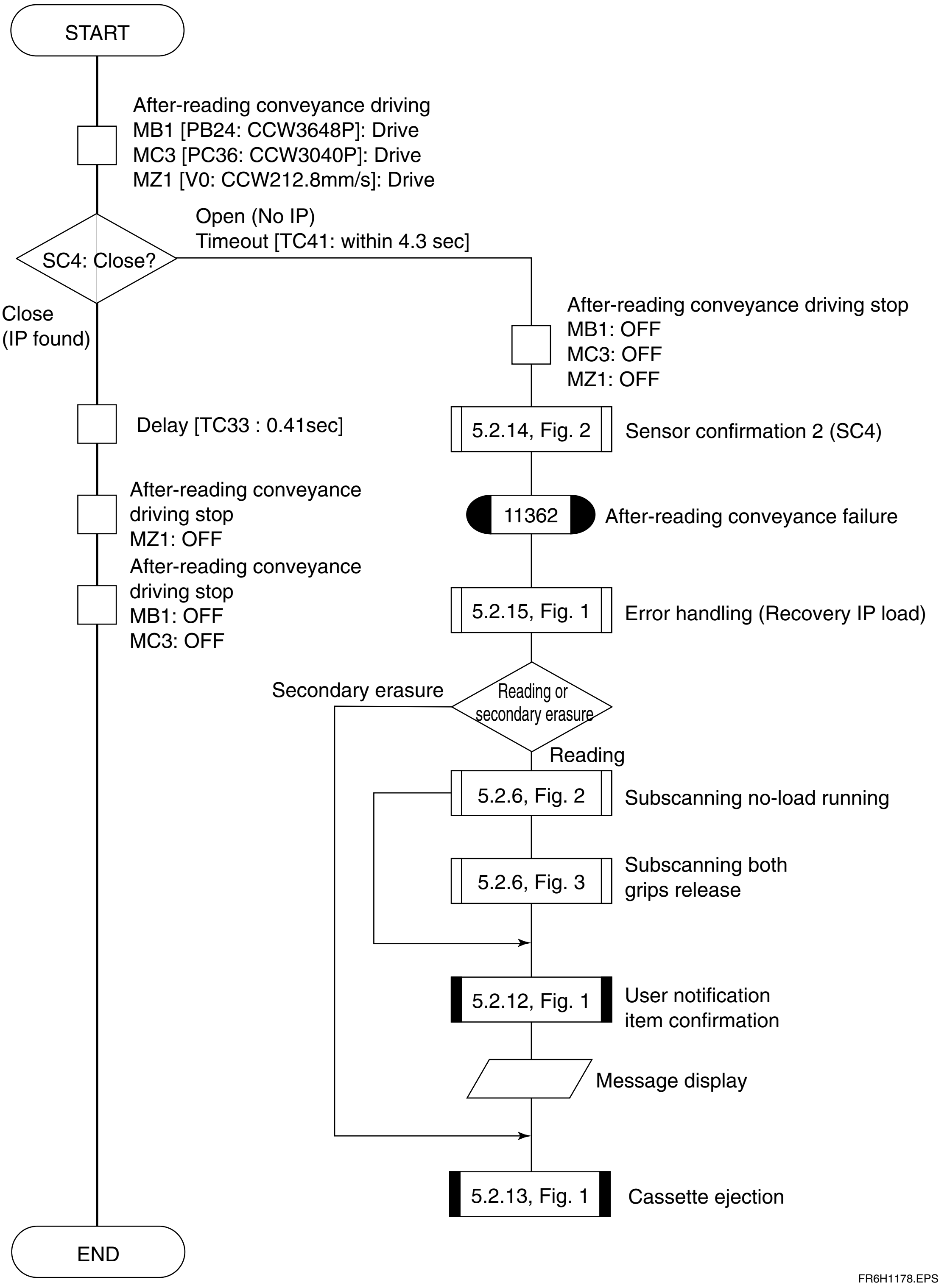
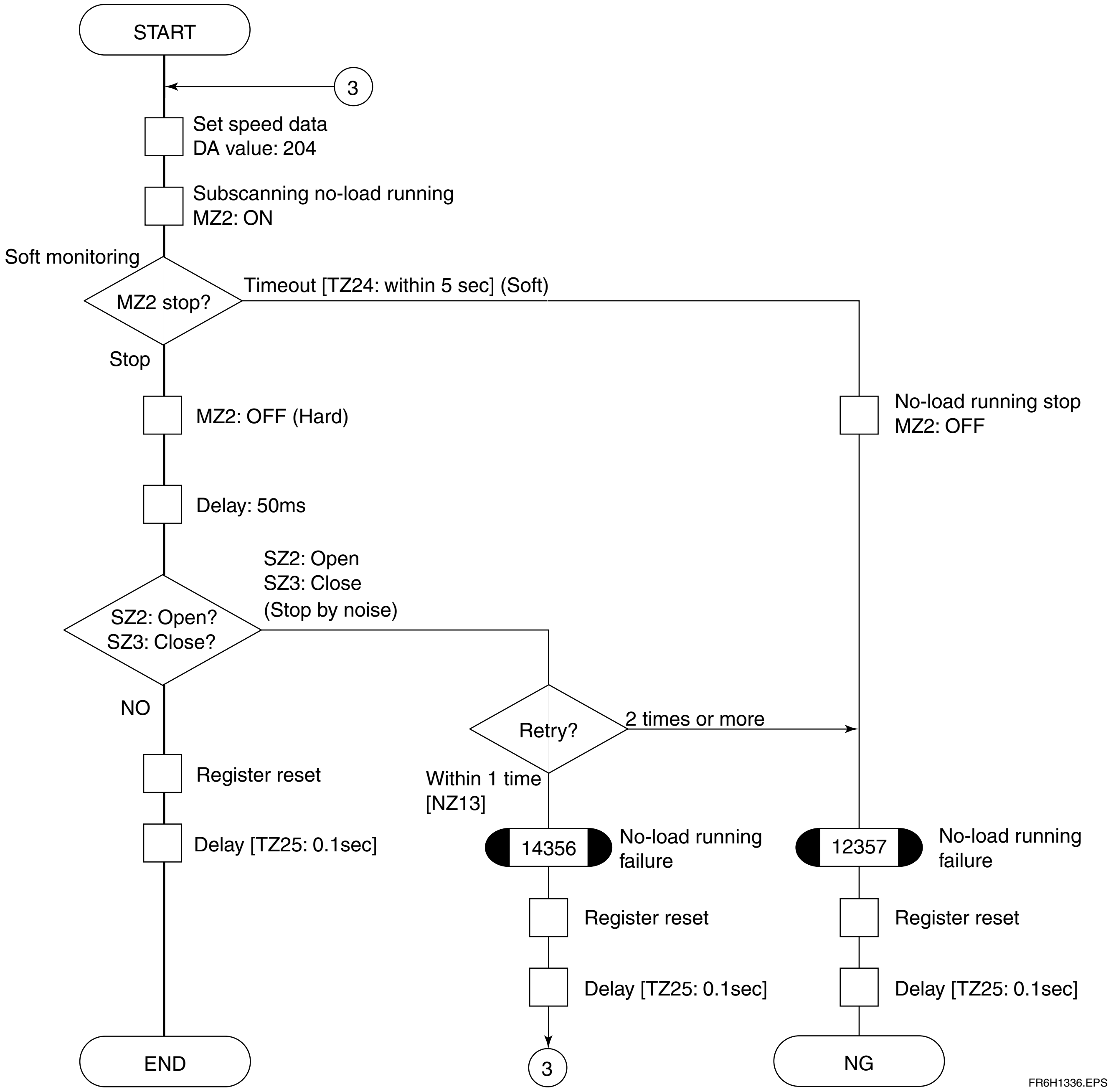
## 5.2.6 After-Reading Conveyance

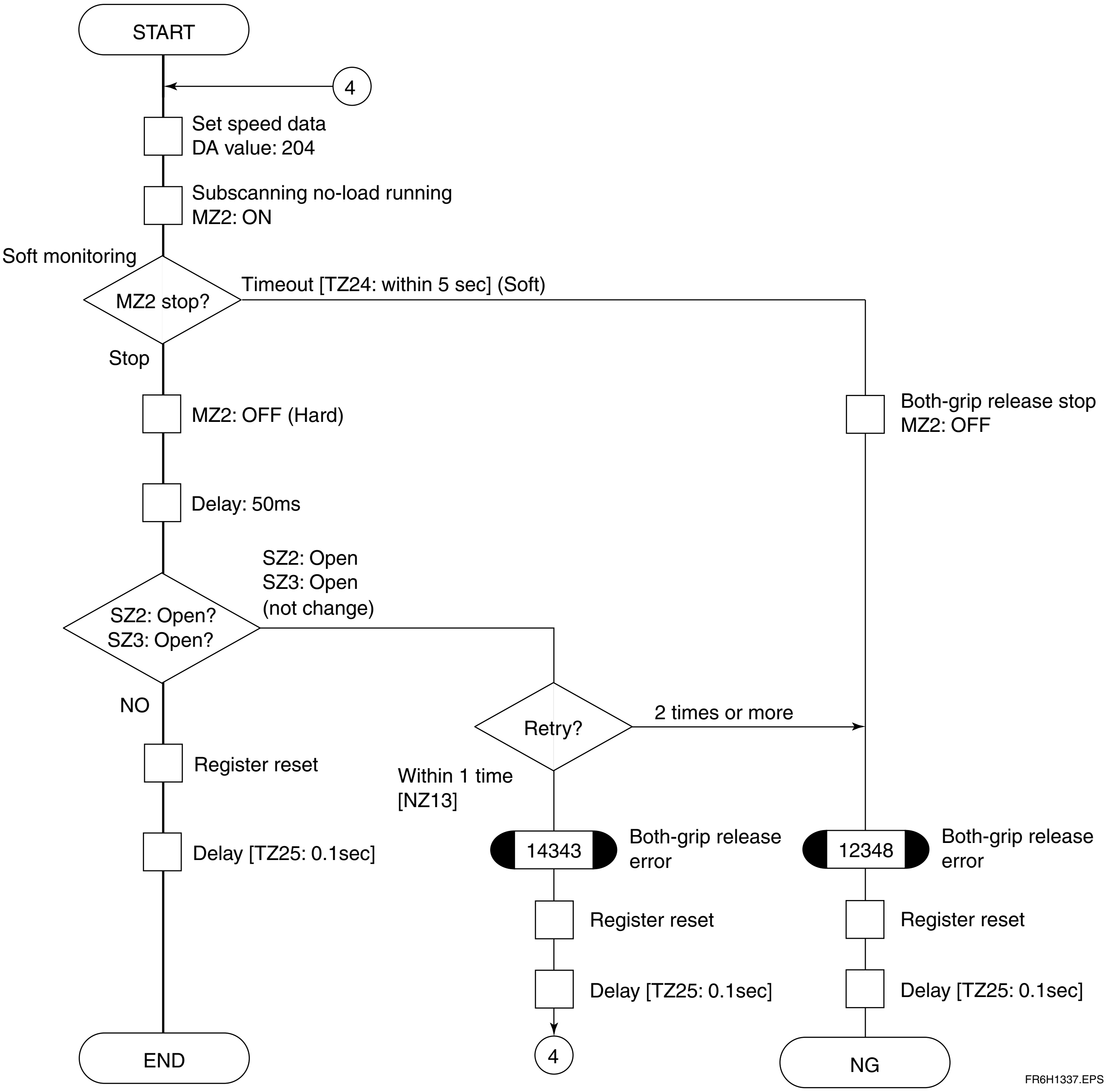
## <Fig. 1 After-Reading Conveyance Flow>


START
After-reading conveyance driving
MB1 [PB24: CCW3648P]: Drive
MC3 [PC36: CCW3040P]: Drive
MZ1 [V0: CCW212.8mm/s]: Drive
SC4: Close?
Open (No IP)
Timeout [TC41: within 4.3 sec]
Close
(IP found)
After-reading conveyance driving stop
MB1: OFF
MC3: OFF
MZ1: OFF
Delay [TC33 : 0.41sec]
5.2.14, Fig. 2
Sensor confirmation 2 (SC4)
After-reading conveyance
driving stop
MZ1: OFF
11362
After-reading conveyance failure
After-reading conveyance
driving stop
MB1: OFF
MC3: OFF
5.2.15, Fig. 1
Error handling (Recovery IP load)
Secondary erasure
Reading or
secondary erasure
Reading
5.2.6, Fig. 2
Subscanning no-load running
5.2.6, Fig. 3
Subscanning both
grips release
5.2.12, Fig. 1
User notification
item confirmation
Message display
5.2.13, Fig. 1
Cassette ejection
END
FR6H1178.EPS

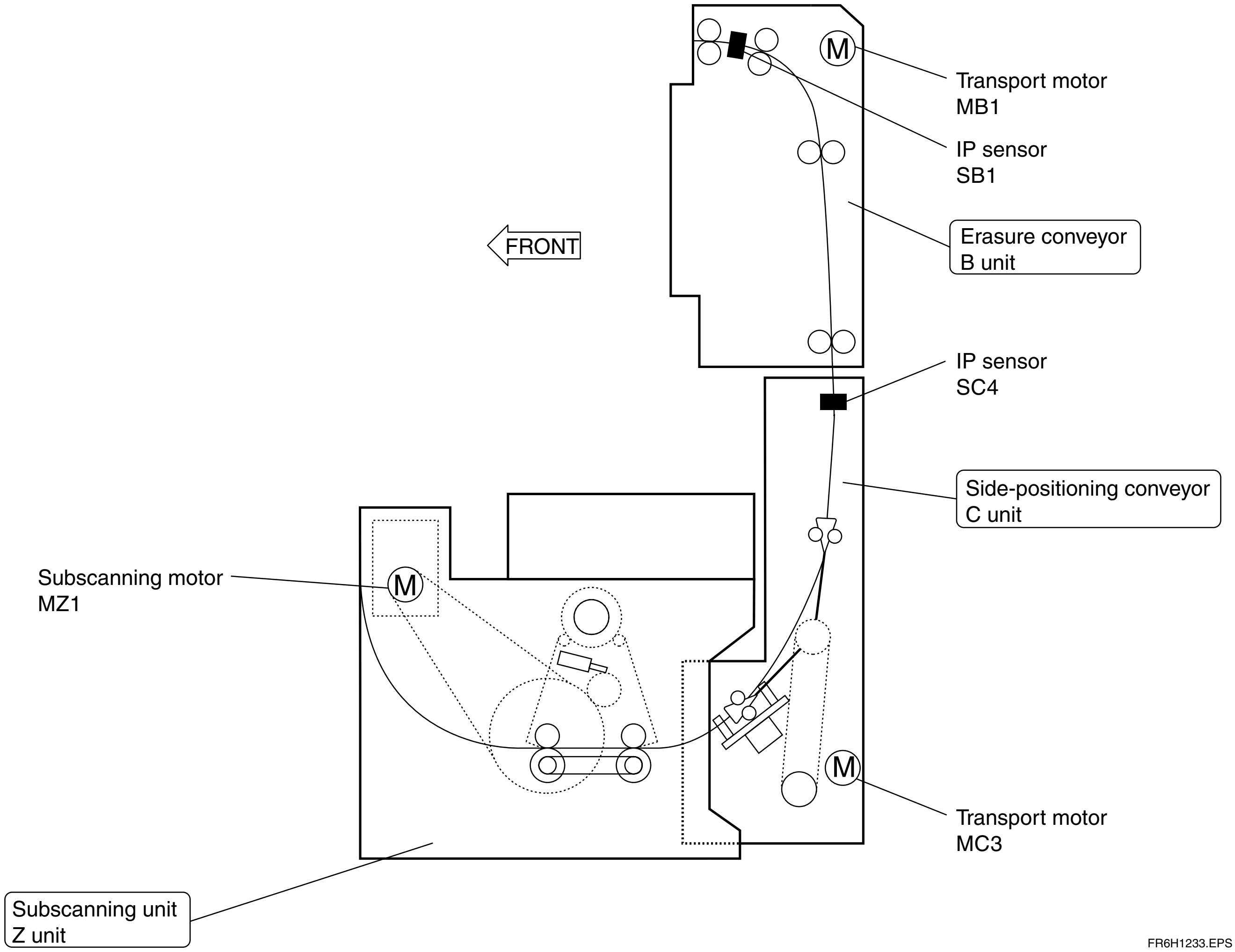
## <Fig. 2 Subscanning No-Load Running Flow>


START
3
Set speed data
DA value: 204
Subscanning no-load running
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ24: within 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
No-load running stop
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Close
(Stop by noise)
SZ2: Open?
SZ3: Close?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
Delay [TZ25: 0.1sec]
14356
No-load running failure
12357
No-load running failure
Register reset
Delay [TZ25: 0.1sec]
Register reset
Delay [TZ25: 0.1sec]
END
3
NG
FR6H1336.EPS

## <Fig. 3 Subscanning Both-Grip Release Flow>


START
4
Set speed data
DA value: 204
Subscanning no-load running
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ24: within 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
Both-grip release stop
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Open
(not change)
SZ2: Open?
SZ3: Open?
NO
Retry?
2 times or more
Register reset
Within 1 time
[NZ13]
Delay [TZ25: 0.1sec]
14343
Both-grip release
error
12348
Both-grip release
error
Register reset
Register reset
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
END
4
NG
FR6H1337.EPS

## <I/O Locations>


Transport motor
MB1
IP sensor
SB1
FRONT
Erasure conveyor
B unit
IP sensor
SC4
Side-positioning conveyor
C unit
Subscanning motor
MZ1
M
Transport motor
MC3
Subscanning unit
Z unit

FR6H1233.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MZ1 | Subscanning motor | FFM | Conveys the IP. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| SC4 | Erasure positioning IP sensor | PI (19mm) | Detects the IP. |

TR6H1084.EPS

## <Sensor ON/OFF Status>

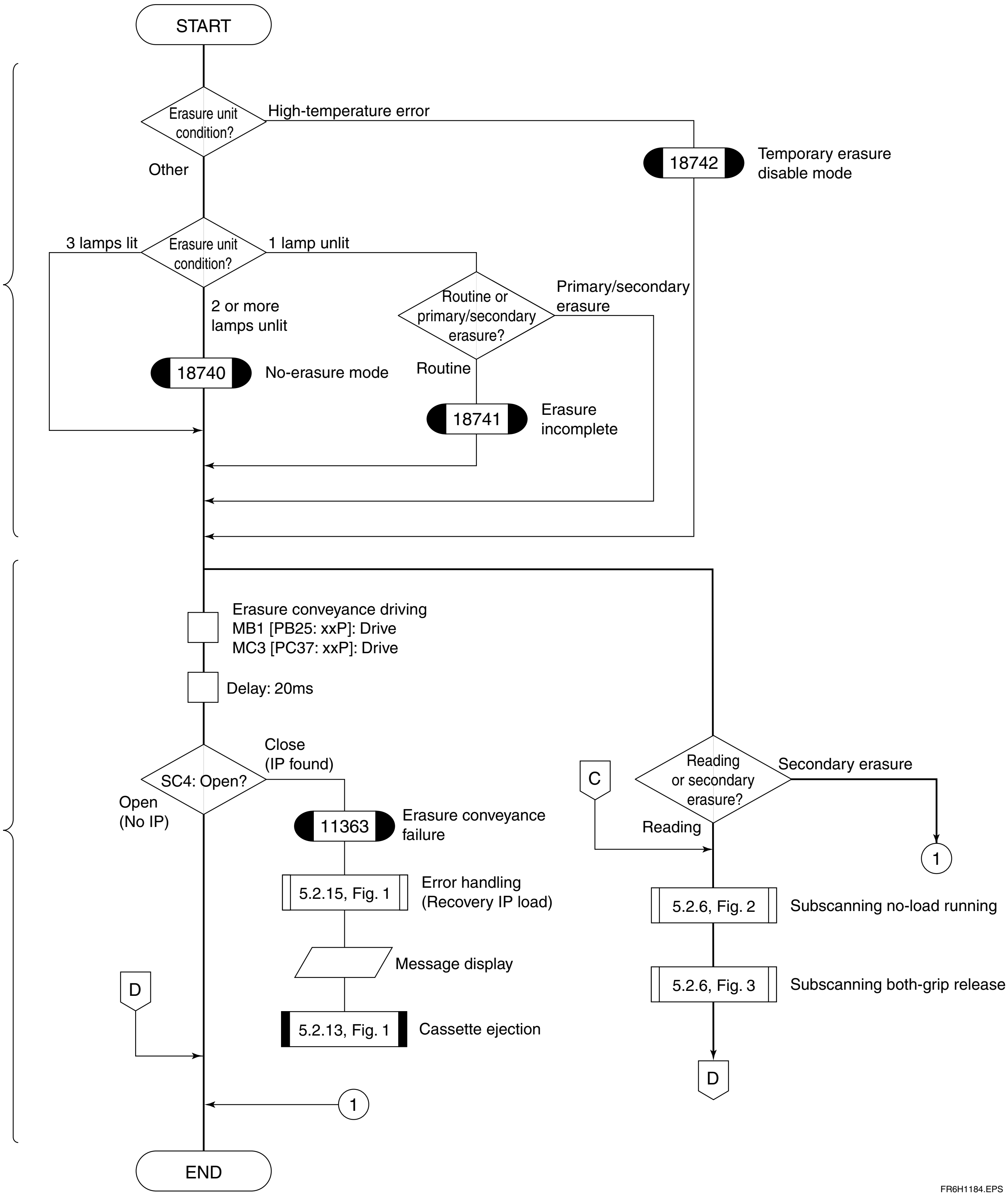
SC4

OFF: Open (no IP)　　ON: Close (IP found)

FR6H1257.EPS

## 5.2.7 Erasure Conveyance

## <Fig. 1 Erasure Conveyance Flow>

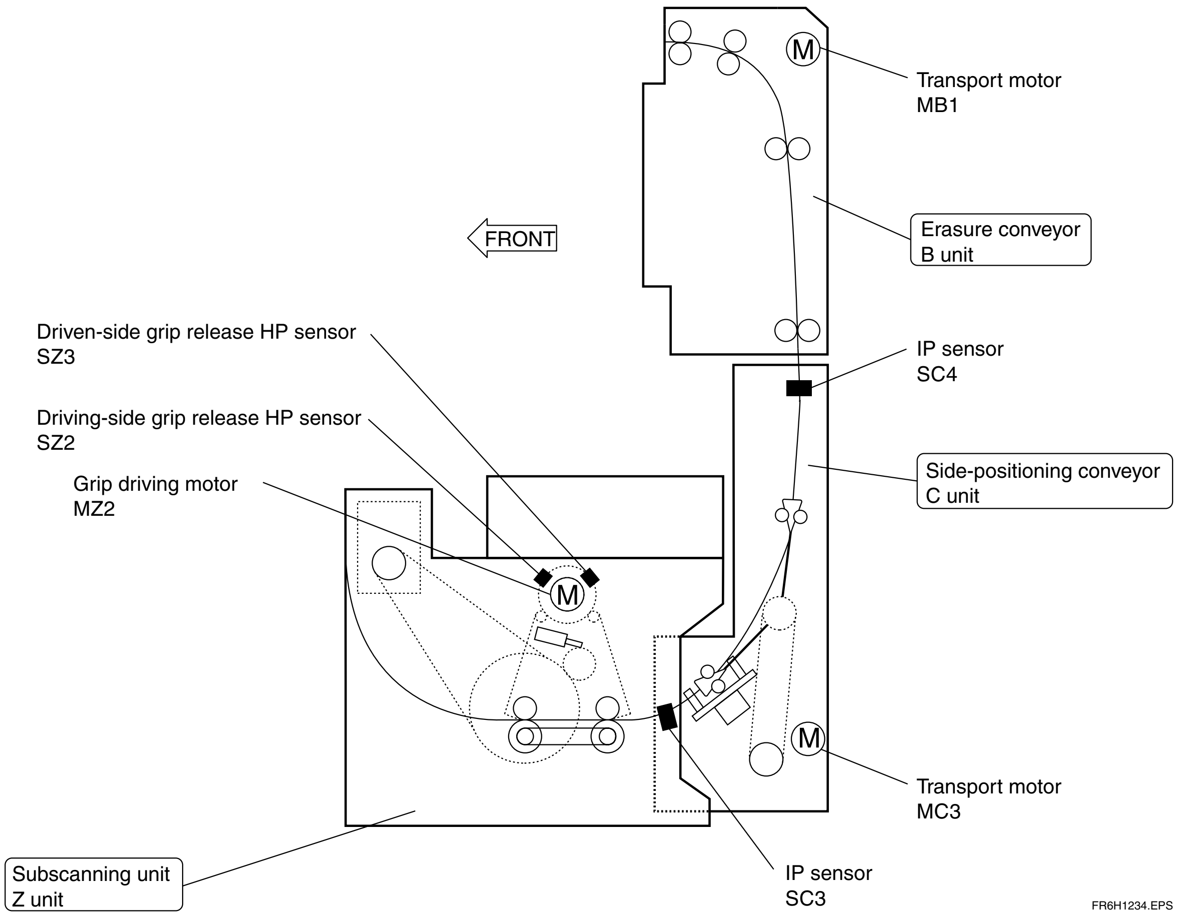

START
Erasure unit condition?
High-temperature error
Other
18742
Temporary erasure disable mode
3 lamps lit
Erasure unit condition?
1 lamp unlit
2 or more lamps unlit
Routine or primary/secondary erasure?
Primary/secondary erasure
18740
No-erasure mode
Routine
18741
Erasure incomplete
Erasure conveyance driving
MB1 [PB25: xxP]: Drive
MC3 [PC37: xxP]: Drive
Delay: 20ms
SC4: Open?
Close (IP found)
Open (No IP)
11363
Erasure conveyance failure
5.2.15, Fig. 1
Error handling (Recovery IP load)
Message display
5.2.13, Fig. 1
Cassette ejection
C
Reading or secondary erasure?
Secondary erasure
Reading
1
5.2.6, Fig. 2
Subscanning no-load running
5.2.6, Fig. 3
Subscanning both-grip release
D
D
1
END

FR6H1184.EPS

| Symbol | Operation | IP size | | | | | |
|---|---|---|---|---|---|---|---|
| | | 14x17 | 14x14 | 10x12 | 8x10 | Metric 18x24 | Metric 24x30 |
| PB25 | Erasure conveyance driving | CCW14568P | CCW12624P | CCW11316P | CCW8706P | CCW8118P | CCW11190P |
| PC37 | Erasure conveyance driving | CCW12140P | CCW10520P | CCW9430P | CCW7255P | CCW6765P | CCW9325P |

TR6H1312.EPS

## <I/O Locations>


Transport motor
MB1
Erasure conveyor
B unit
FRONT
Driven-side grip release HP sensor
SZ3
IP sensor
SC4
Driving-side grip release HP sensor
SZ2
Side-positioning conveyor
C unit
Grip driving motor
MZ2
M
Transport motor
MC3
Subscanning unit
Z unit
IP sensor
SC3
FR6H1234.EPS

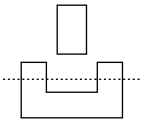
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |
| LDSN | Unlit lamp sensor | | |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| SC3 | Side-positioning IP sensor | PI (19mm) | Detects the IP. |
| SC4 | Erasure positioning IP sensor | PI (19mm) | Detects the IP. |

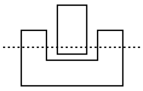
TR6H1080.EPS

# <Sensor ON/OFF Status>

SZ2/SZ3

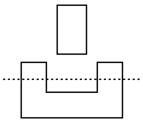


OFF: Open (not blocked)

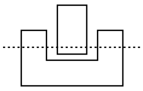


ON: Close (blocked)

SC3/SC4



OFF: Open (no IP)



ON: Close (IP found)

FR6H1258.EPS

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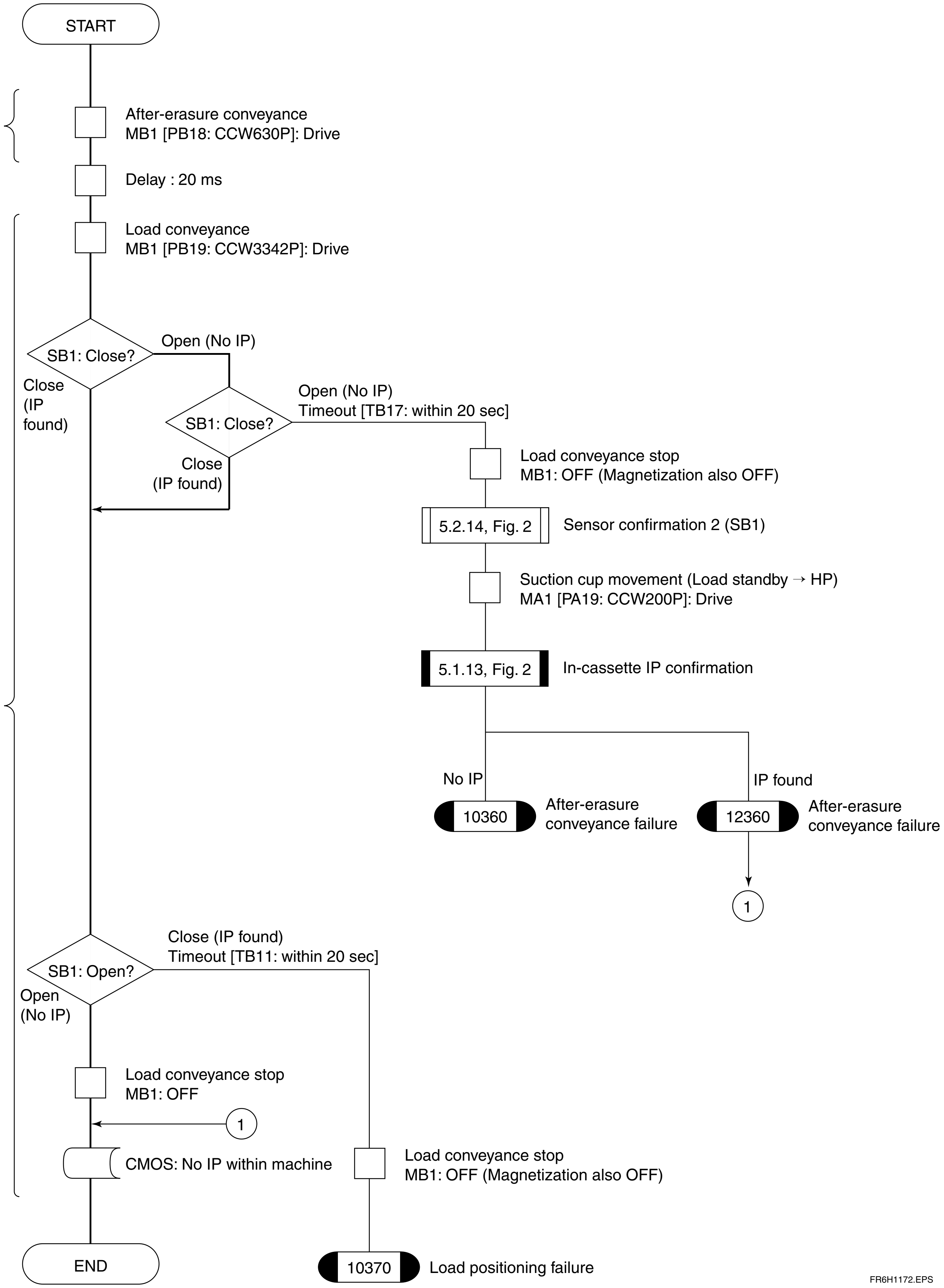
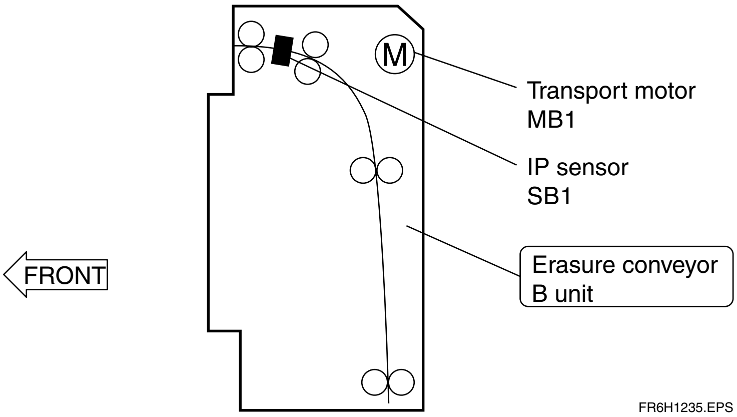
## 5.2.8 Load Conveyance

## <Fig. 1 Load Conveyance Flow>


START
After-erasure conveyance
MB1 [PB18: CCW630P]: Drive
Delay : 20 ms
Load conveyance
MB1 [PB19: CCW3342P]: Drive
SB1: Close?
Open (No IP)
Close
(IP
found)
SB1: Close?
Open (No IP)
Timeout [TB17: within 20 sec]
Close
(IP found)
Load conveyance stop
MB1: OFF (Magnetization also OFF)
5.2.14, Fig. 2
Sensor confirmation 2 (SB1)
Suction cup movement (Load standby → HP)
MA1 [PA19: CCW200P]: Drive
5.1.13, Fig. 2
In-cassette IP confirmation
No IP
10360
After-erasure
conveyance failure
IP found
12360
After-erasure
conveyance failure
1
SB1: Open?
Close (IP found)
Timeout [TB11: within 20 sec]
Open
(No IP)
Load conveyance stop
MB1: OFF
1
CMOS: No IP within machine
Load conveyance stop
MB1: OFF (Magnetization also OFF)
END
10370
Load positioning failure

FR6H1172.EPS

## <I/O Locations>


M
Transport motor
MB1
IP sensor
SB1
Erasure conveyor
B unit
FRONT
FR6H1235.EPS

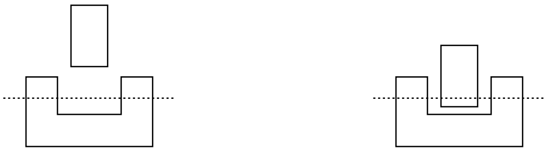
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| SB1 | Cassette inlet IP sensor | PI (19mm) | Detects the presence of an IP. |

TR6H1078.EPS

## <Sensor ON/OFF Status>

SB1



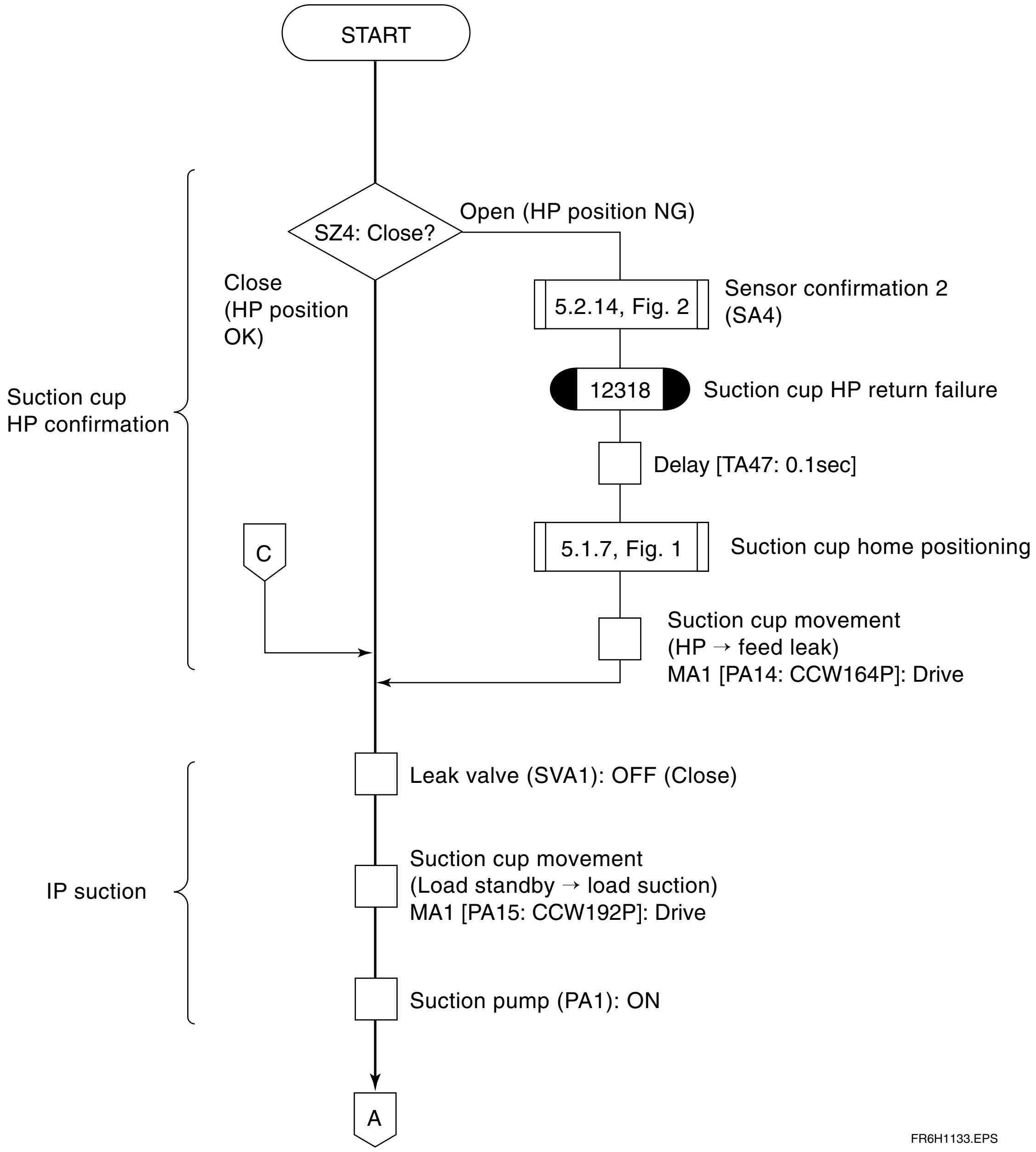
OFF: Open (no IP)

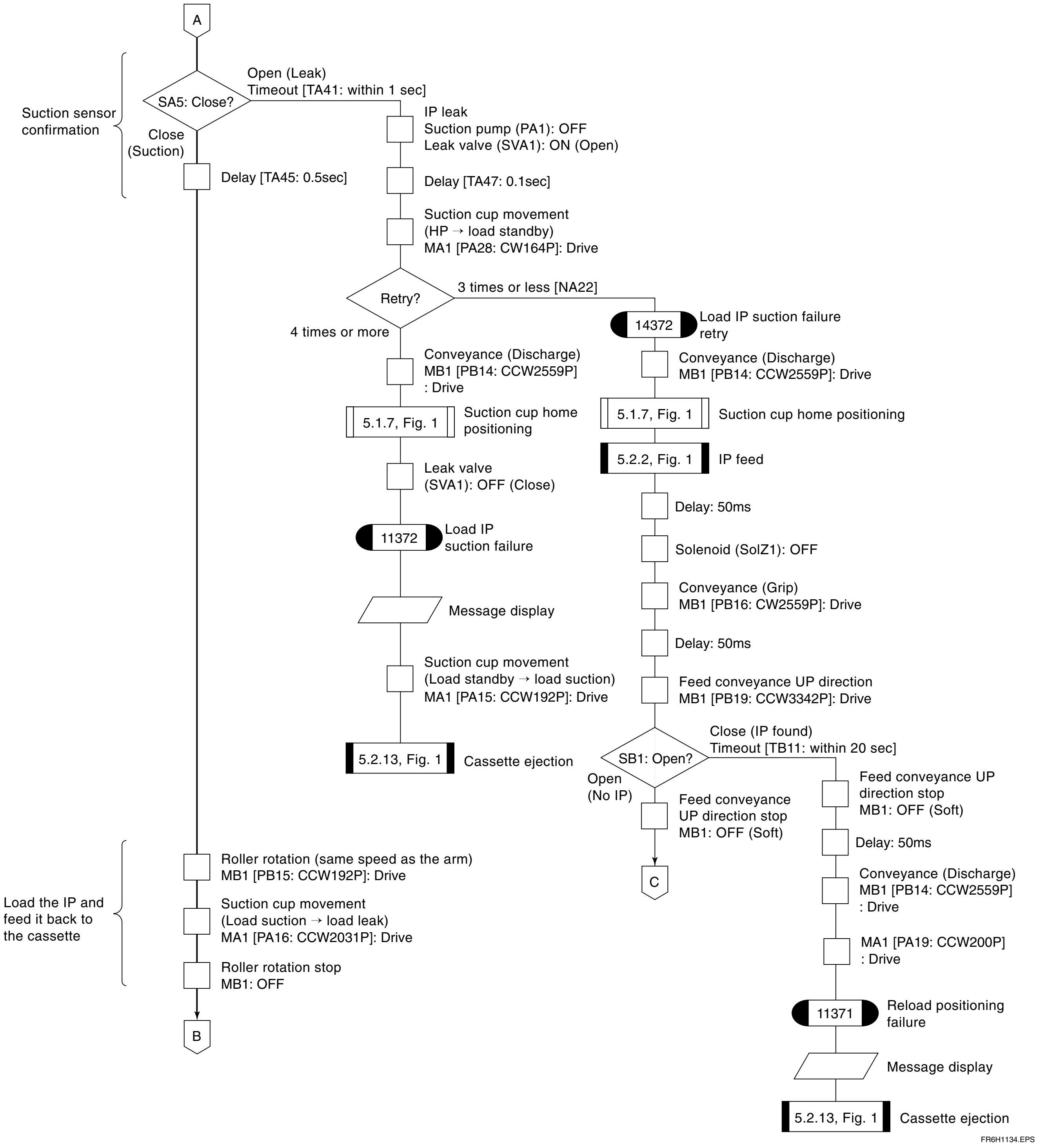
ON: Close (IP found)

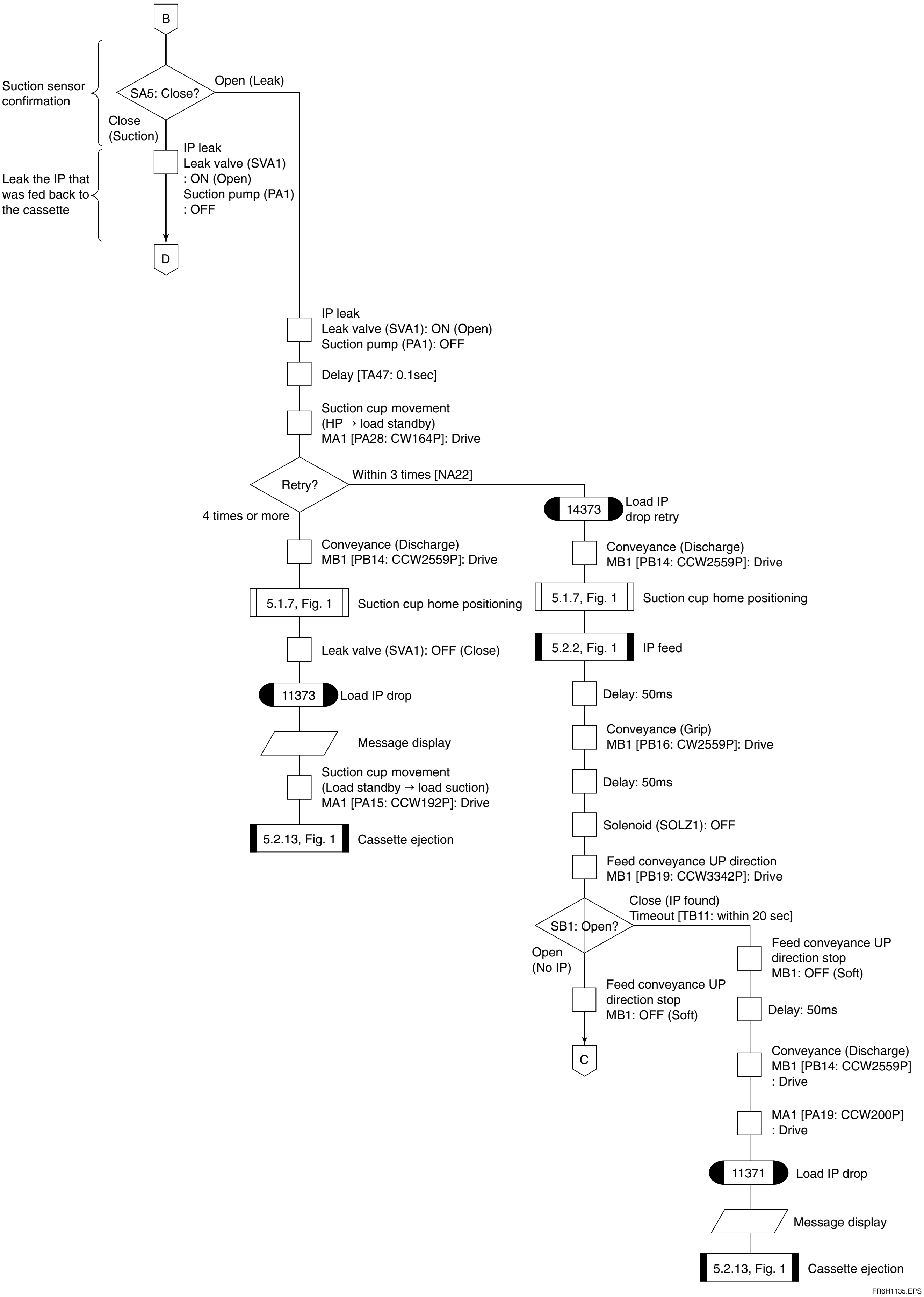
FR6H1259.EPS

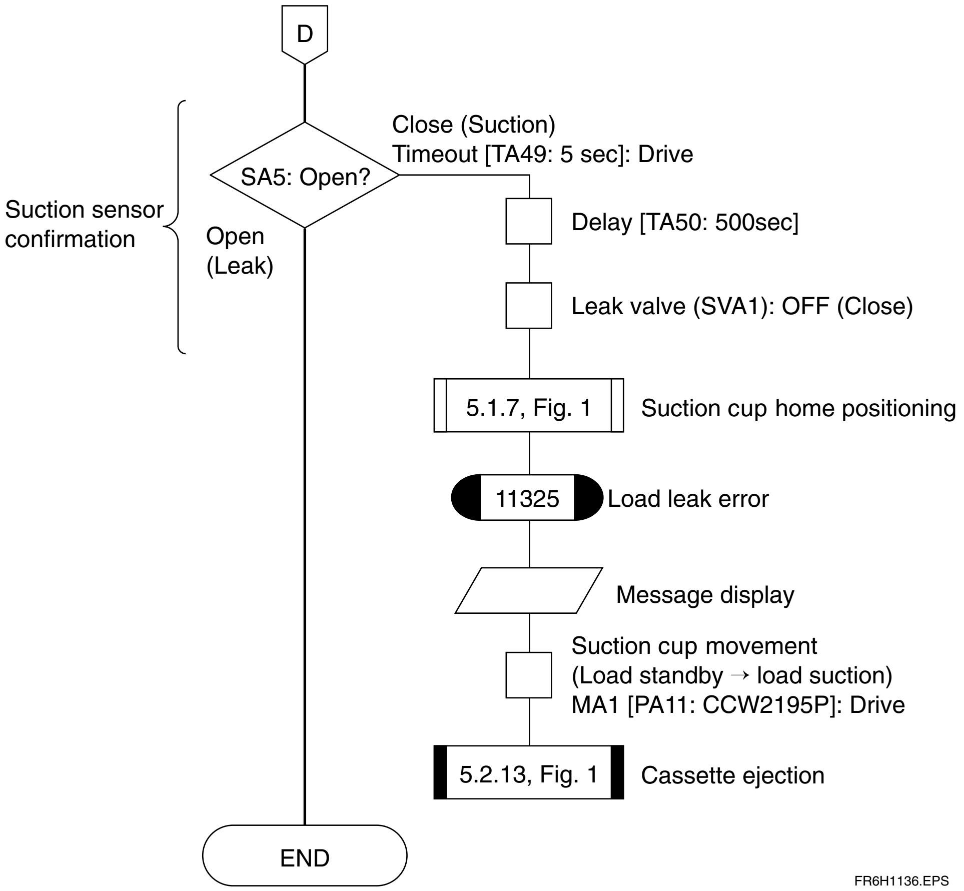
## 5.2.9 IP Load

### <Fig. 1 IP Load Flow>

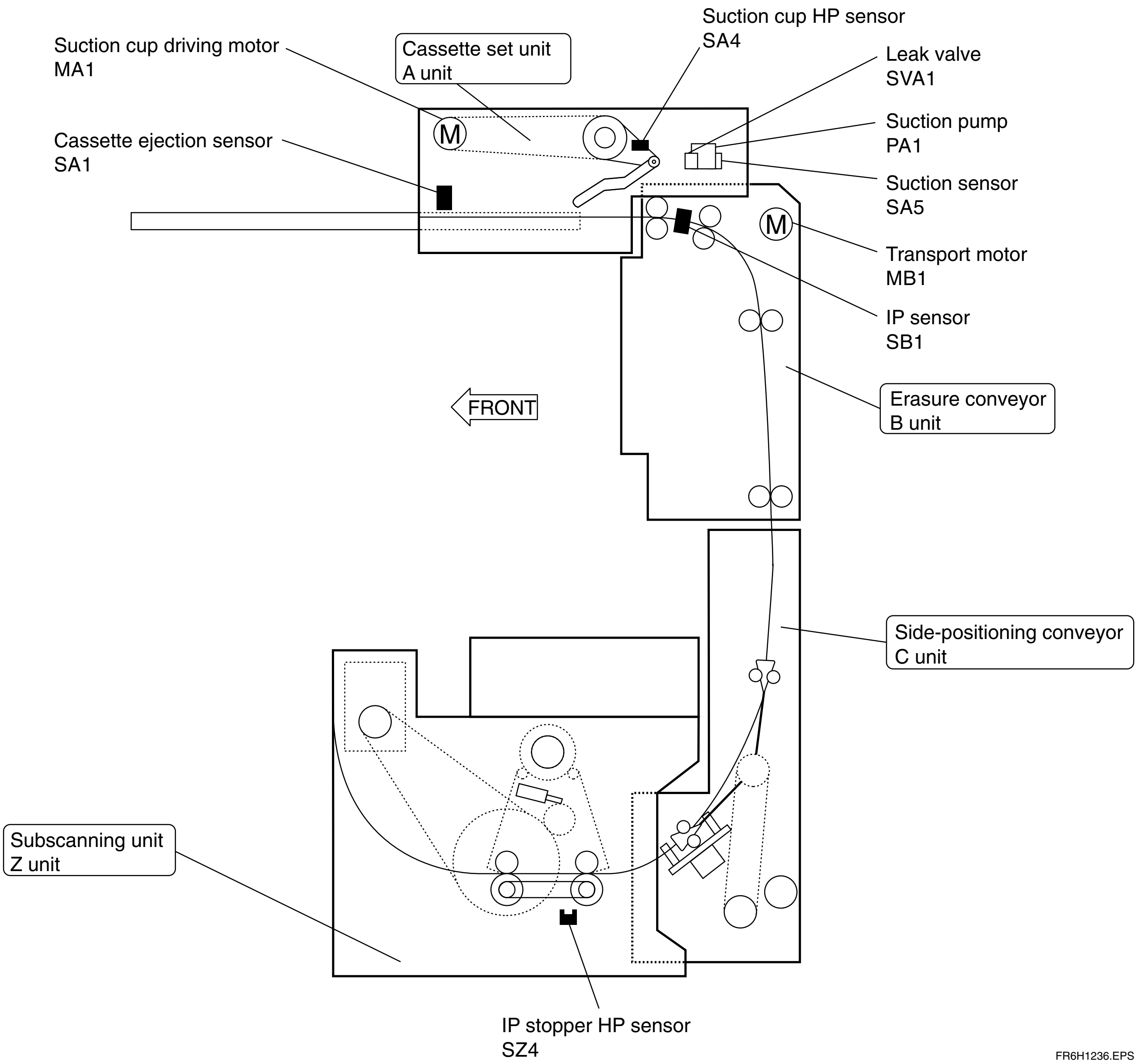

START
SZ4: Close?
Open (HP position NG)
Close
(HP position
OK)
5.2.14, Fig. 2
Sensor confirmation 2
(SA4)
12318
Suction cup HP return failure
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Suction cup movement
(HP → feed leak)
MA1 [PA14: CCW164P]: Drive
C
Suction cup
HP confirmation
Leak valve (SVA1): OFF (Close)
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
Suction pump (PA1): ON
IP suction
A
FR6H1133.EPS


A
Suction sensor confirmation
SA5: Close?
Open (Leak)
Timeout [TA41: within 1 sec]
Close (Suction)
Delay [TA45: 0.5sec]
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Delay [TA47: 0.1sec]
Suction cup movement
(HP → load standby)
MA1 [PA28: CW164P]: Drive
Retry?
3 times or less [NA22]
4 times or more
14372
Load IP suction failure retry
Conveyance (Discharge)
MB1 [PB14: CCW2559P]
: Drive
5.1.7, Fig. 1
Suction cup home positioning
Leak valve
(SVA1): OFF (Close)
11372
Load IP suction failure
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
5.2.13, Fig. 1
Cassette ejection
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
5.2.2, Fig. 1
IP feed
Delay: 50ms
Solenoid (SolZ1): OFF
Conveyance (Grip)
MB1 [PB16: CW2559P]: Drive
Delay: 50ms
Feed conveyance UP direction
MB1 [PB19: CCW3342P]: Drive
SB1: Open?
Close (IP found)
Timeout [TB11: within 20 sec]
Open (No IP)
Feed conveyance UP direction stop
MB1: OFF (Soft)
C
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2559P]
: Drive
MA1 [PA19: CCW200P]
: Drive
11371
Reload positioning failure
Message display
5.2.13, Fig. 1
Cassette ejection
Load the IP and feed it back to the cassette
Roller rotation (same speed as the arm)
MB1 [PB15: CCW192P]: Drive
Suction cup movement
(Load suction → load leak)
MA1 [PA16: CCW2031P]: Drive
Roller rotation stop
MB1: OFF
B
FR6H1134.EPS


B
Suction sensor confirmation
SA5: Close?
Open (Leak)
Close (Suction)
Leak the IP that was fed back to the cassette
IP leak
Leak valve (SVA1) : ON (Open)
Suction pump (PA1) : OFF
D
IP leak
Leak valve (SVA1): ON (Open)
Suction pump (PA1): OFF
Delay [TA47: 0.1sec]
Suction cup movement
(HP → load standby)
MA1 [PA28: CW164P]: Drive
Retry?
Within 3 times [NA22]
4 times or more
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
Leak valve (SVA1): OFF (Close)
11373
Load IP drop
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
5.2.13, Fig. 1
Cassette ejection
14373
Load IP drop retry
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
5.2.2, Fig. 1
IP feed
Delay: 50ms
Conveyance (Grip)
MB1 [PB16: CW2559P]: Drive
Delay: 50ms
Solenoid (SOLZ1): OFF
Feed conveyance UP direction
MB1 [PB19: CCW3342P]: Drive
SB1: Open?
Close (IP found)
Timeout [TB11: within 20 sec]
Open (No IP)
Feed conveyance UP direction stop
MB1: OFF (Soft)
C
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2559P] : Drive
MA1 [PA19: CCW200P] : Drive
11371
Load IP drop
Message display
5.2.13, Fig. 1
Cassette ejection
FR6H1135.EPS


D
Suction sensor confirmation
SA5: Open?
Close (Suction)
Timeout [TA49: 5 sec]: Drive
Open
(Leak)
Delay [TA50: 500sec]
Leak valve (SVA1): OFF (Close)
5.1.7, Fig. 1
Suction cup home positioning
11325
Load leak error
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA11: CCW2195P]: Drive
5.2.13, Fig. 1
Cassette ejection
END
FR6H1136.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Suction cup HP sensor
SA4
Leak valve
SVA1
Suction pump
PA1
Cassette ejection sensor
SA1
Suction sensor
SA5
M
M
Transport motor
MB1
IP sensor
SB1
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Subscanning unit
Z unit
IP stopper HP sensor
SZ4

FR6H1236.EPS

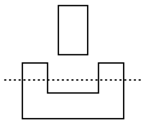
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA1 | Cassette ejection sensor | PI (5mm) | Detects that the cassette has been ejected. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SA5 | Suction sensor | Suction sensor | Detects that it is sucked. |
| SVA1 | IP leak | Solenoid valve | Leaks when turned ON. |
| PA1 | IP suction | DC pump | Sucks when turned ON |
| MA1 | Suction cup driving motor | Pulse motor | Open the rear cover of the cassette and moves the roller. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| SB1 | Cassette inlet IP sensor | PI (19mm) | Sensor that detects the presence of an IP. |
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |

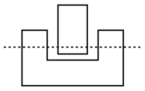
TR6H1065.EPS

## <Sensor ON/OFF Status>

SA1/SA4/SA5/SZ4

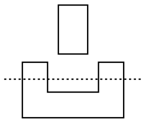


OFF: Open (not blocked)

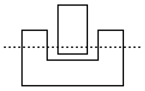


ON: Close (blocked)

SB1



OFF: Open (no IP)

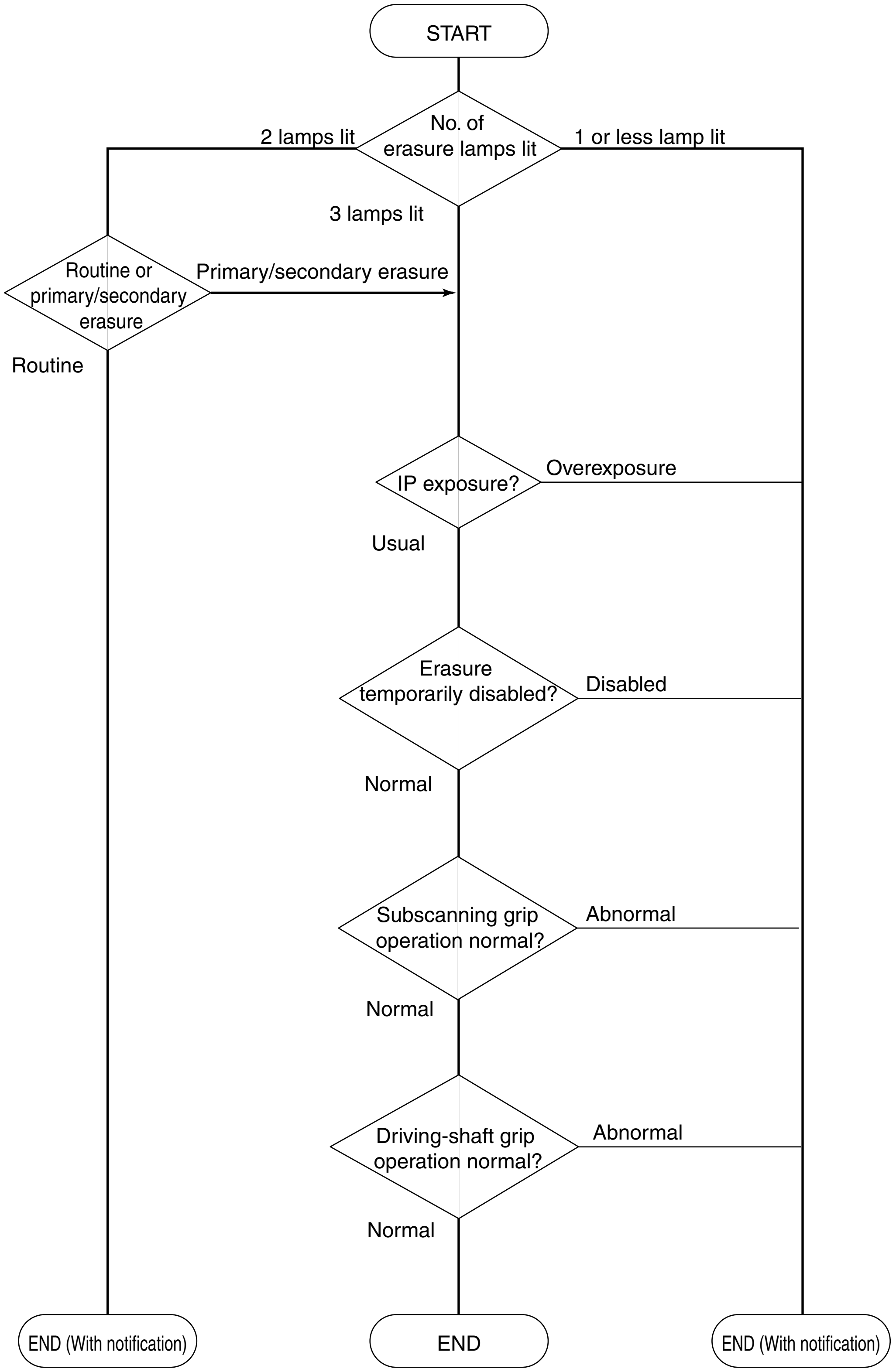


ON: Close (IP found)

FR6H1260.EPS

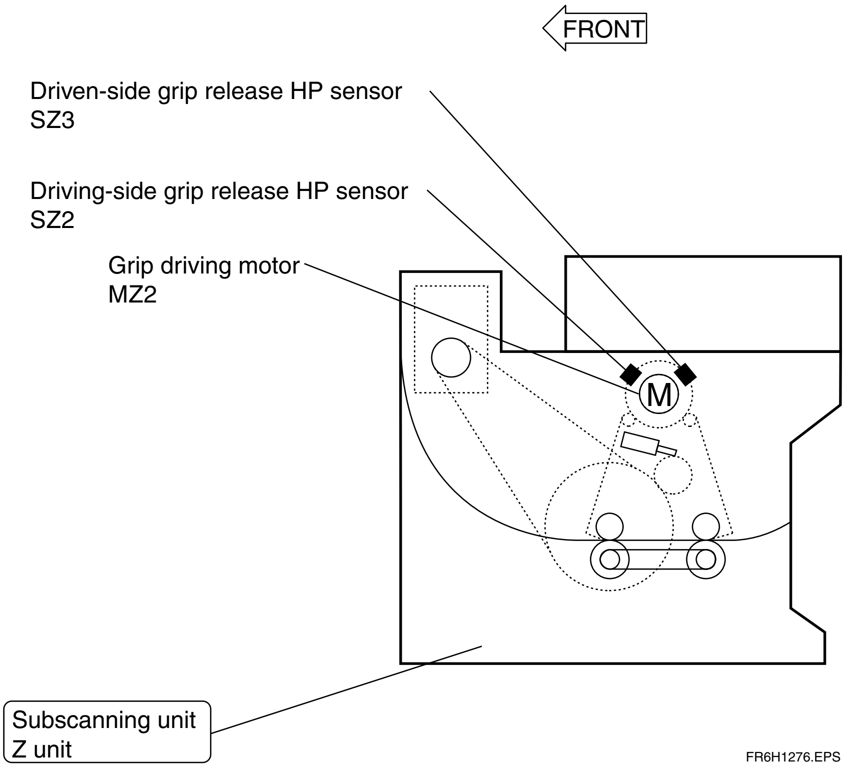
## 5.2.10 User Notification Item Judgment

## <Fig. 1 User Notification Item Judgment Flow>


START
No. of erasure lamps lit
2 lamps lit
1 or less lamp lit
3 lamps lit
Routine or primary/secondary erasure
Primary/secondary erasure
Routine
IP exposure?
Overexposure
Usual
Erasure temporarily disabled?
Disabled
Normal
Subscanning grip operation normal?
Abnormal
Normal
Driving-shaft grip operation normal?
Abnormal
Normal
END (With notification)
END
END (With notification)

FR6H1275.EPS

## <I/O Locations>


FRONT
Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
M
Subscanning unit
Z unit

FR6H1276.EPS

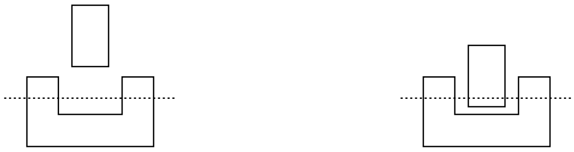
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |

TR6H1095.EPS

## <Sensor ON/OFF Status>

SZ2/SZ3



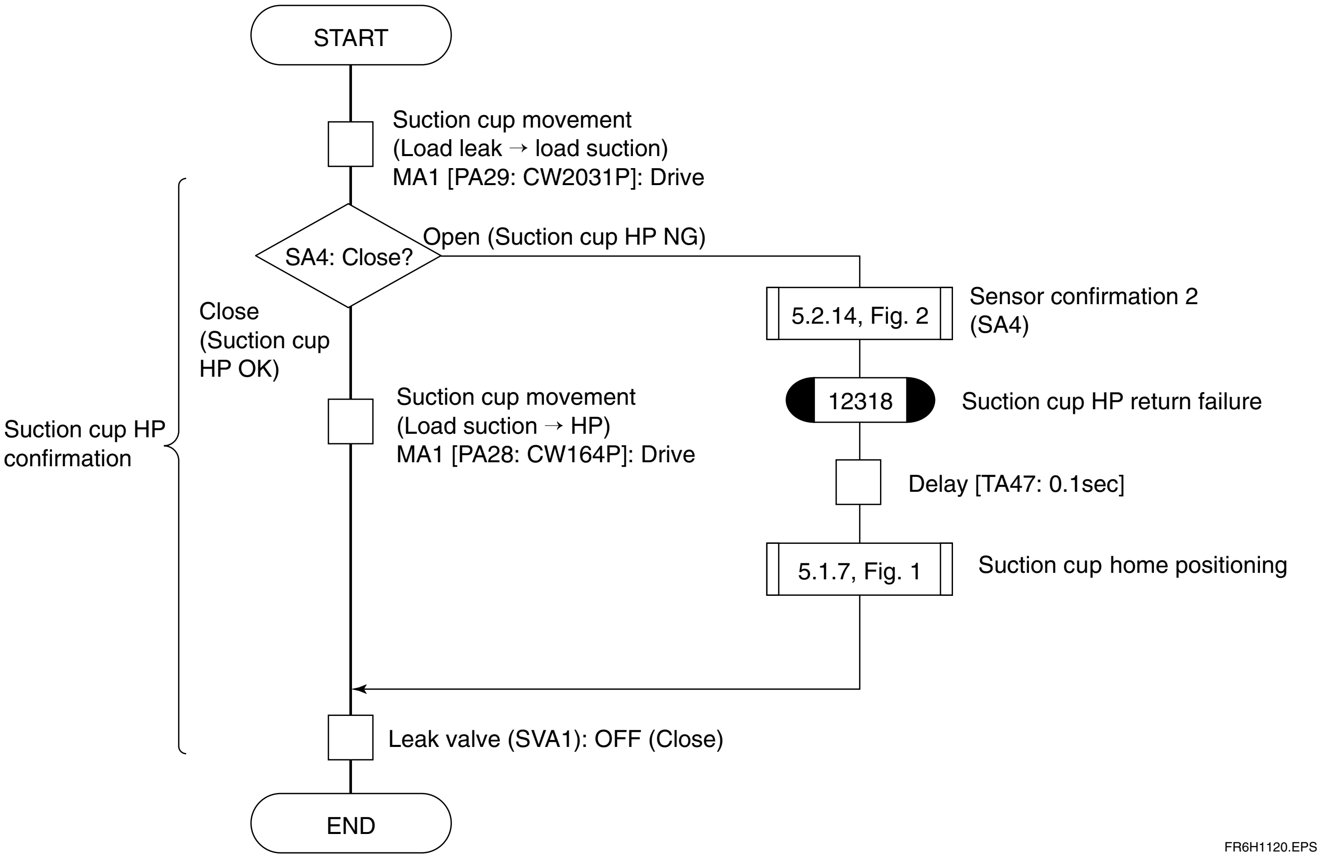
OFF: Open (not blocked)

ON: Close (blocked)

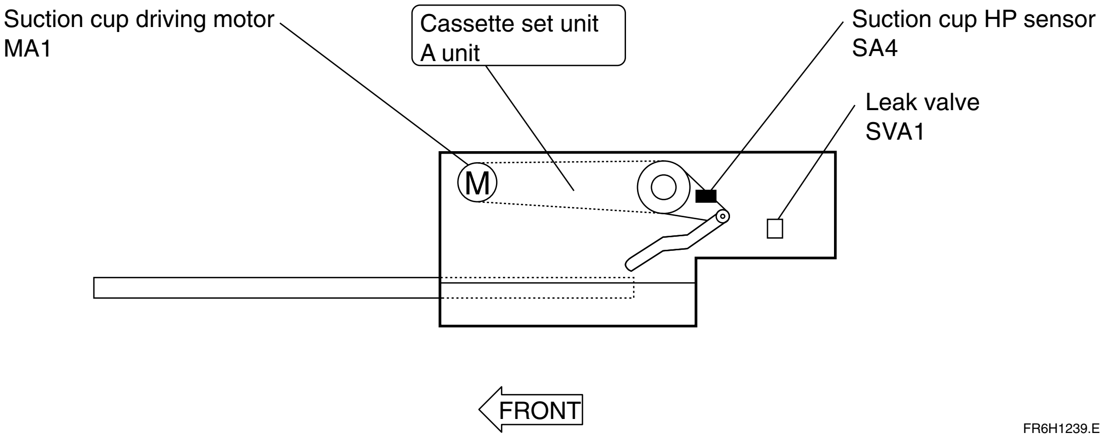
FR6H1277.EPS

## 5.2.11 IP Load Return (Without Cassette Ejection)

## <Fig. 1 IP Load Return Flow>


START
Suction cup movement
(Load leak → load suction)
MA1 [PA29: CW2031P]: Drive
SA4: Close?
Open (Suction cup HP NG)
5.2.14, Fig. 2
Sensor confirmation 2
(SA4)
Close
(Suction cup
HP OK)
Suction cup HP
confirmation
Suction cup movement
(Load suction → HP)
MA1 [PA28: CW164P]: Drive
12318
Suction cup HP return failure
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Leak valve (SVA1): OFF (Close)
END
FR6H1120.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Suction cup HP sensor
SA4
Leak valve
SVA1
M
FRONT

FR6H1239.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| SVA1 | IP leak | Solenoid valve | Leaks when turned ON. |
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |

TR6H1063.EPS

## <Sensor ON/OFF Status>

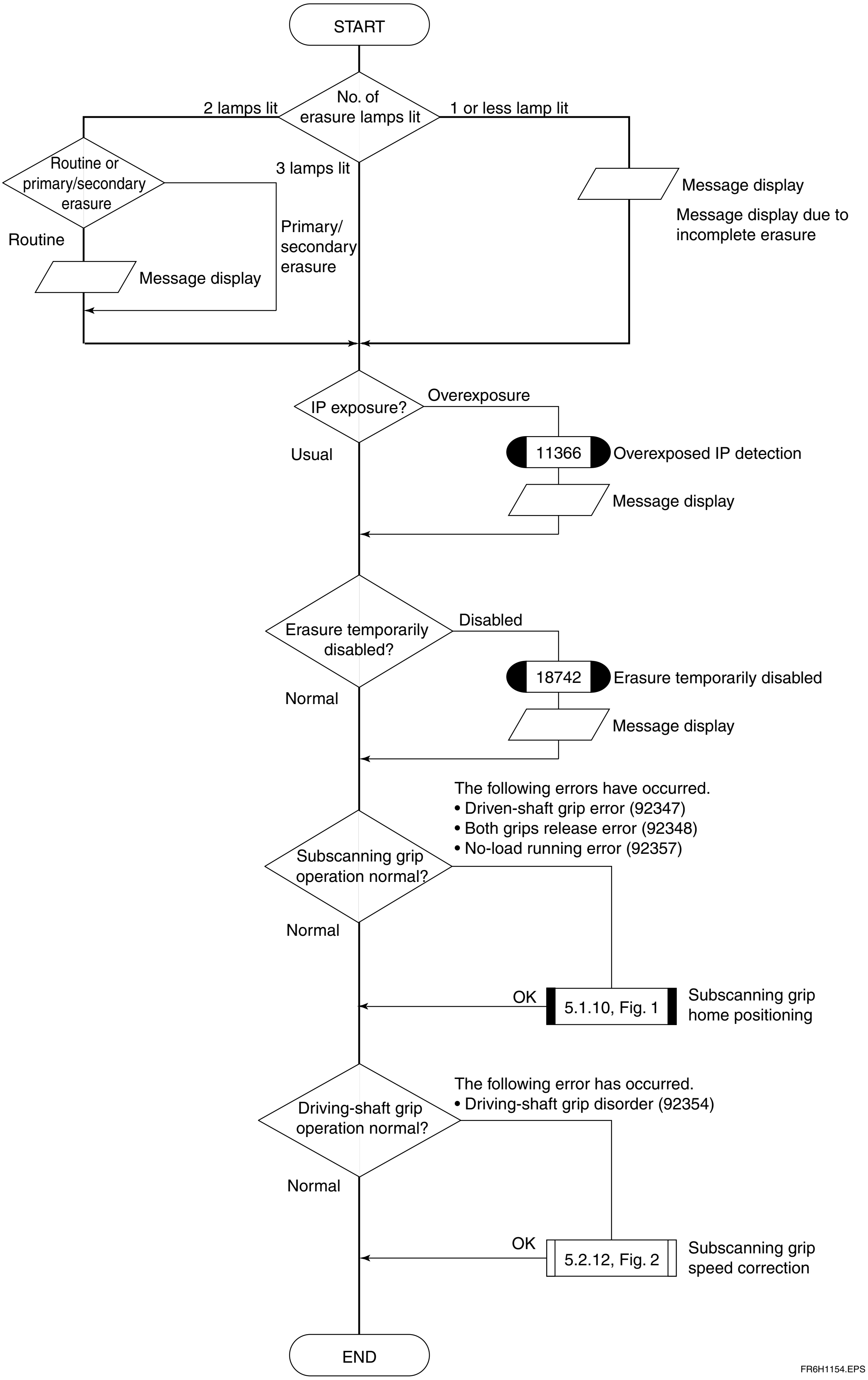
SA4

OFF: Open (not blocked) ON: Close (blocked)

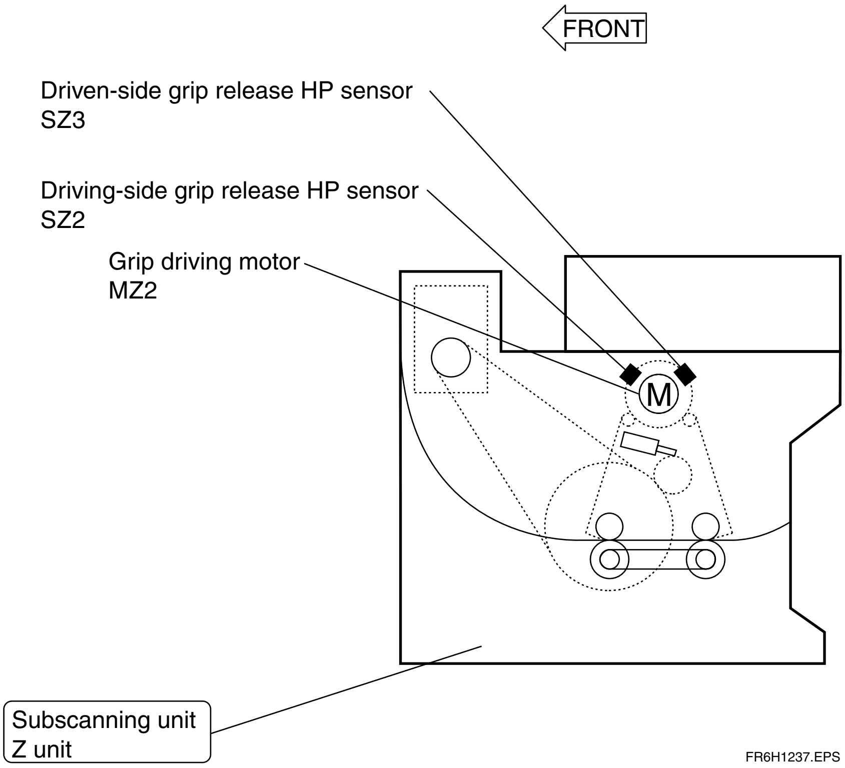
FR6H1263.EPS

## 5.2.12 User Notification Item Confirmation

## <Fig. 1 User Notification Item Confirmation Flow>


START
No. of erasure lamps lit
2 lamps lit
1 or less lamp lit
3 lamps lit
Routine or primary/secondary erasure
Routine
Primary/ secondary erasure
Message display
Message display
Message display due to incomplete erasure
IP exposure?
Overexposure
Usual
11366
Overexposed IP detection
Message display
Erasure temporarily disabled?
Disabled
Normal
18742
Erasure temporarily disabled
Message display
The following errors have occurred.
• Driven-shaft grip error (92347)
• Both grips release error (92348)
• No-load running error (92357)
Subscanning grip operation normal?
Normal
OK
5.1.10, Fig. 1
Subscanning grip home positioning
The following error has occurred.
• Driving-shaft grip disorder (92354)
Driving-shaft grip operation normal?
Normal
OK
5.2.12, Fig. 2
Subscanning grip speed correction
END
FR6H1154.EPS

## <I/O Locations>


FRONT
Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
M
Subscanning unit
Z unit

FR6H1237.EPS

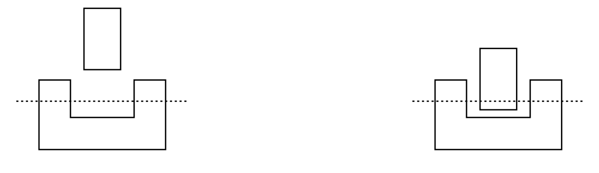
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |

TR6H1074.EPS

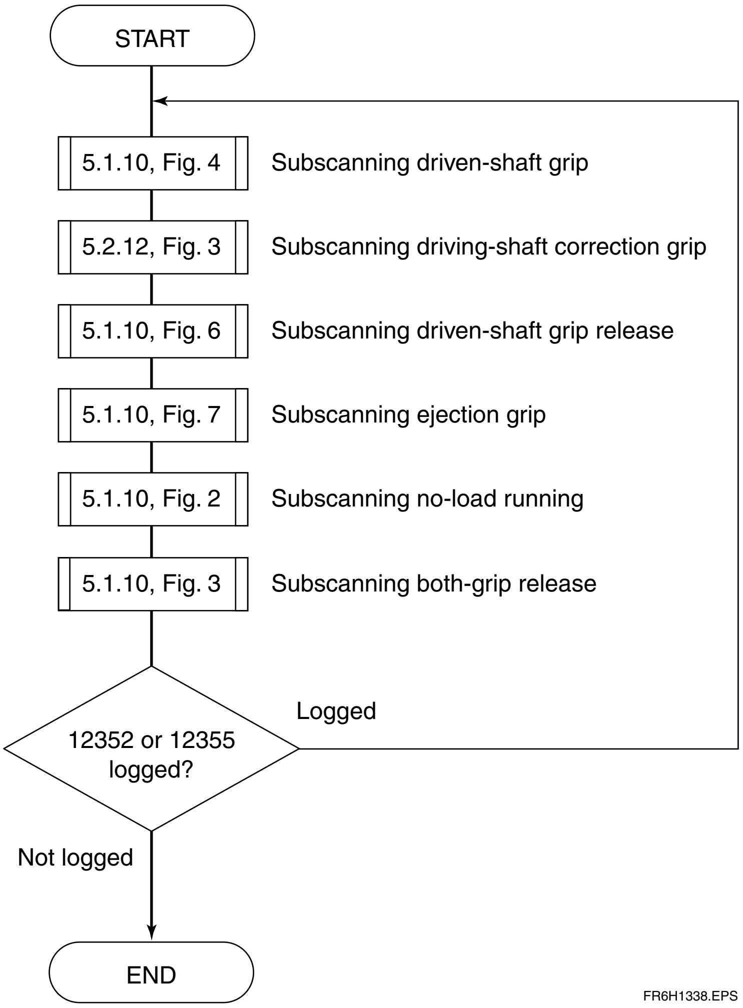
## <Sensor ON/OFF Status>

SZ2/SZ3


OFF: Open (not blocked)
ON: Close (blocked)

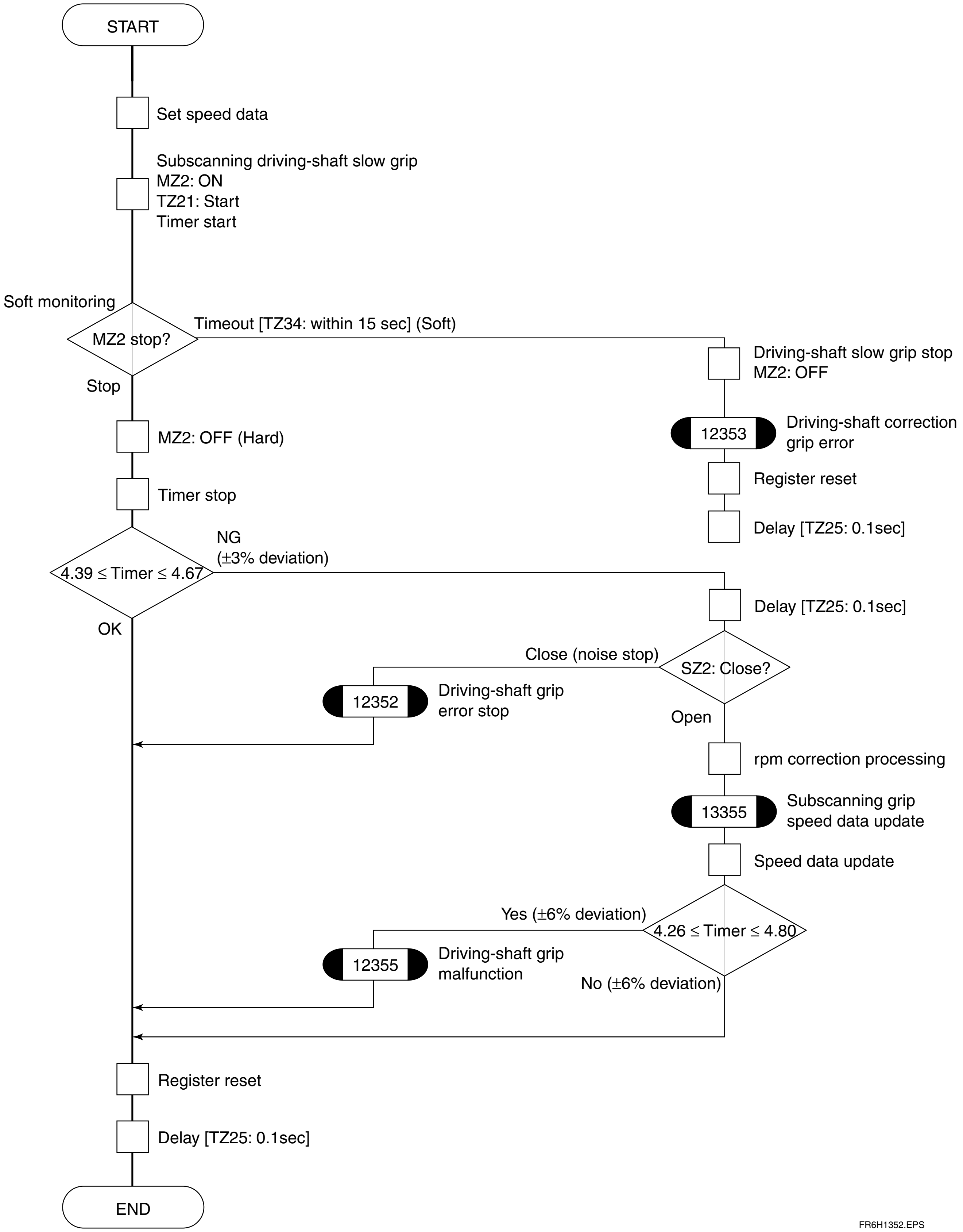
FR6H1261.EPS

# <Fig. 2 Subscanning Grip Speed Correction>


START
5.1.10, Fig. 4
Subscanning driven-shaft grip
5.2.12, Fig. 3
Subscanning driving-shaft correction grip
5.1.10, Fig. 6
Subscanning driven-shaft grip release
5.1.10, Fig. 7
Subscanning ejection grip
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
12352 or 12355 logged?
Logged
Not logged
END

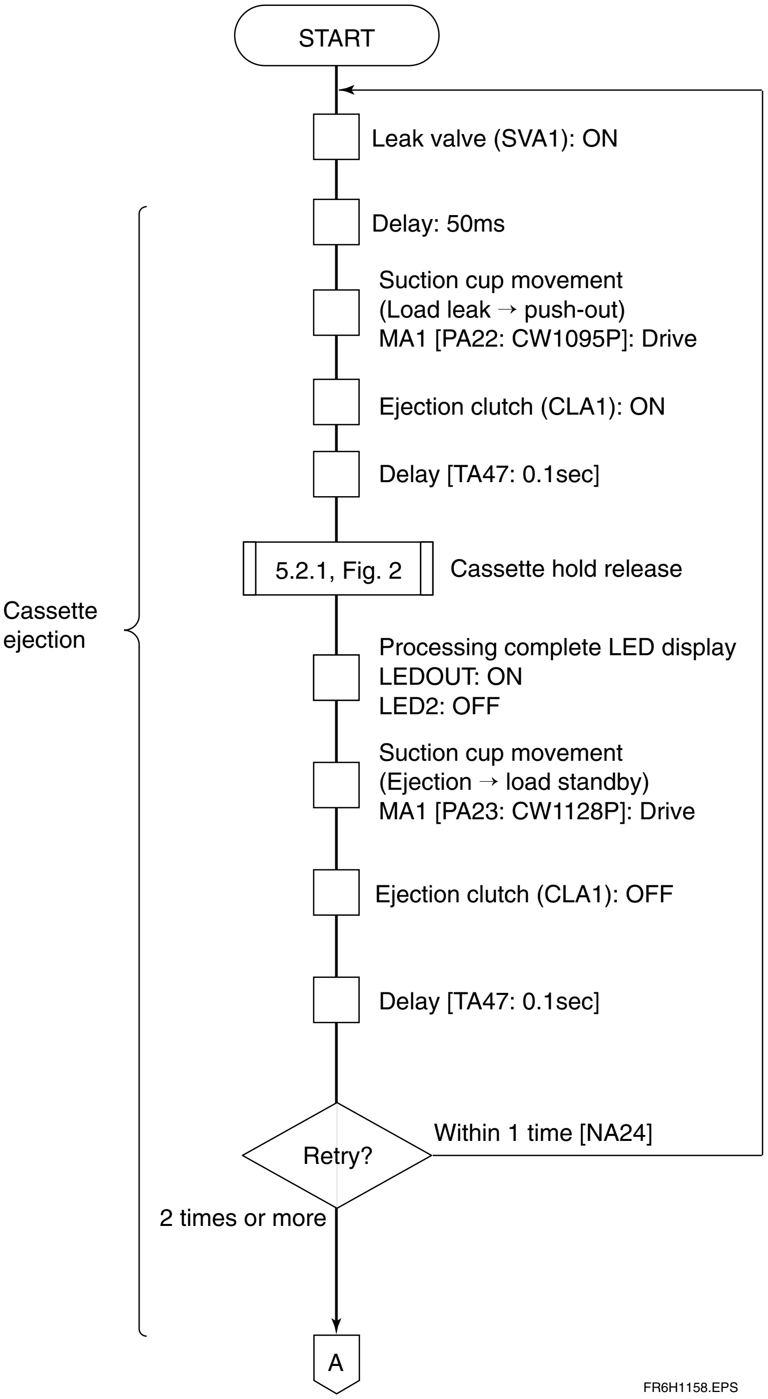
FR6H1338.EPS

## <Fig. 3 Subscanning Driving-Shaft Correction Grip Flow>

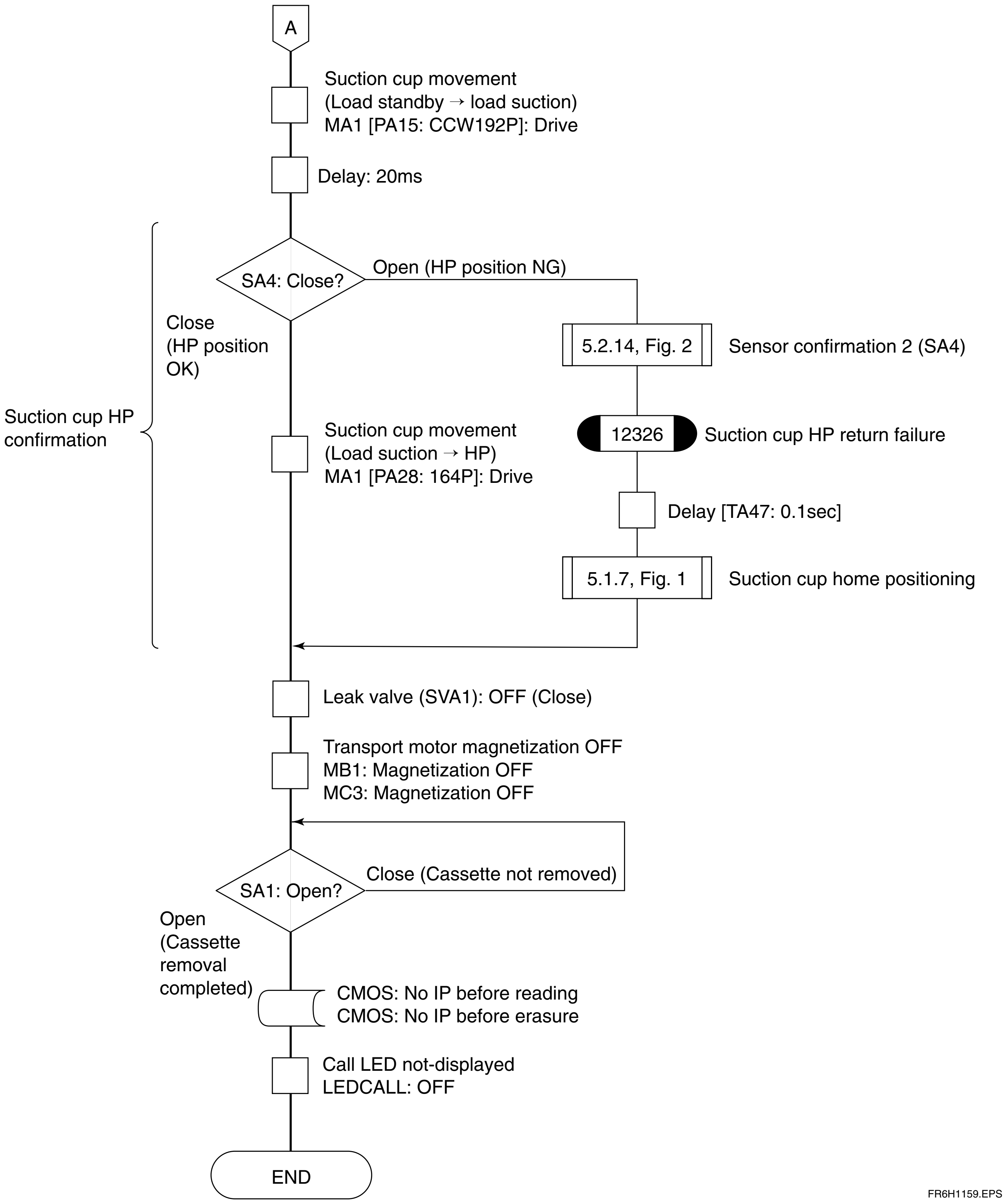

START
Set speed data
Subscanning driving-shaft slow grip
MZ2: ON
TZ21: Start
Timer start
Soft monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Driving-shaft slow grip stop
MZ2: OFF
12353
Driving-shaft correction grip error
Register reset
Delay [TZ25: 0.1sec]
Stop
MZ2: OFF (Hard)
Timer stop
4.39 ≤ Timer ≤ 4.67
NG
(±3% deviation)
OK
Delay [TZ25: 0.1sec]
Close (noise stop)
SZ2: Close?
12352
Driving-shaft grip error stop
Open
rpm correction processing
13355
Subscanning grip speed data update
Speed data update
Yes (±6% deviation)
4.26 ≤ Timer ≤ 4.80
12355
Driving-shaft grip malfunction
No (±6% deviation)
Register reset
Delay [TZ25: 0.1sec]
END
FR6H1352.EPS

## 5.2.13 Cassette Ejection

## <Fig. 1 Cassette Ejection Flow>

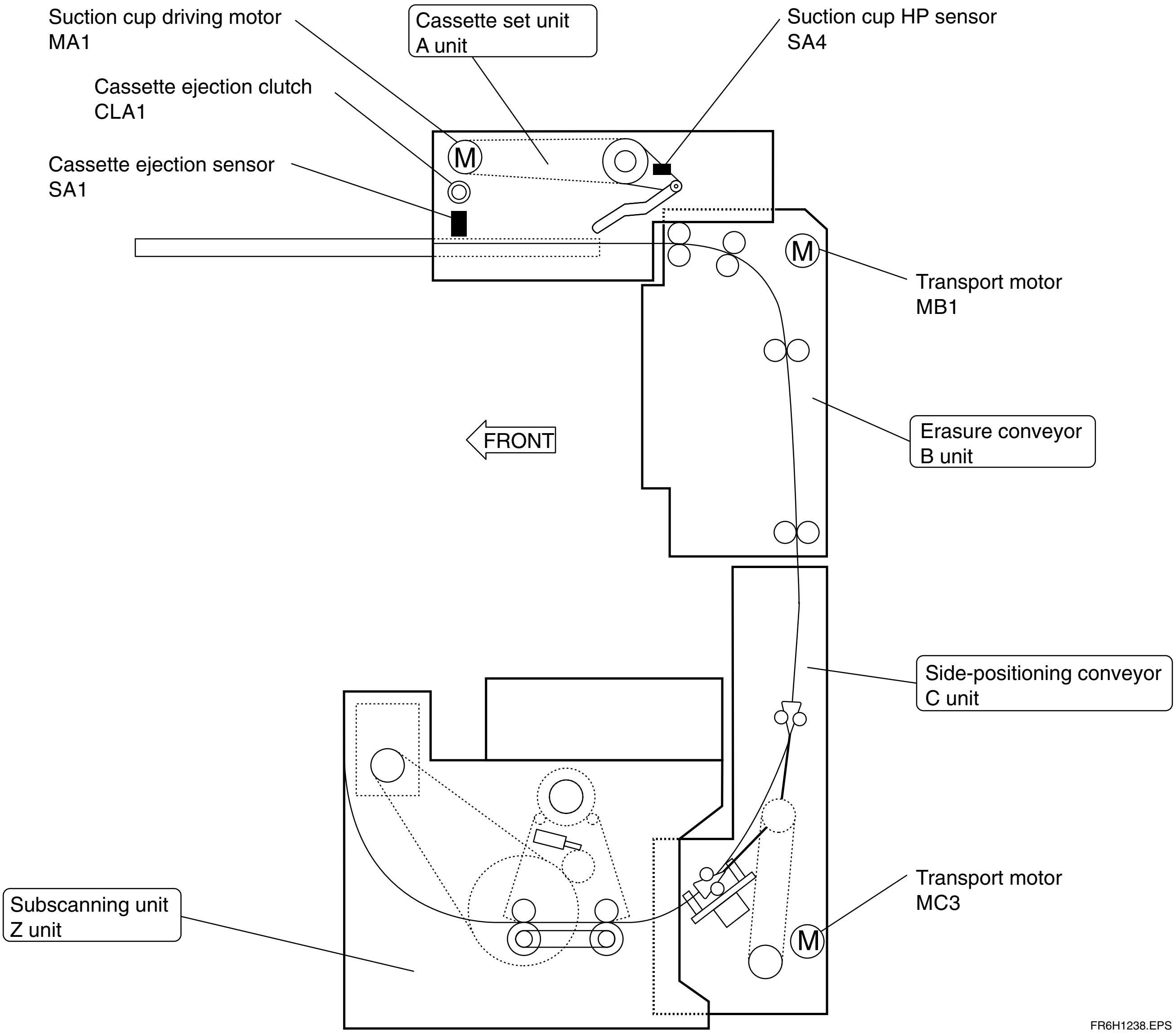

START
Leak valve (SVA1): ON
Delay: 50ms
Suction cup movement
(Load leak → push-out)
MA1 [PA22: CW1095P]: Drive
Ejection clutch (CLA1): ON
Delay [TA47: 0.1sec]
5.2.1, Fig. 2
Cassette hold release
Processing complete LED display
LEDOUT: ON
LED2: OFF
Suction cup movement
(Ejection → load standby)
MA1 [PA23: CW1128P]: Drive
Ejection clutch (CLA1): OFF
Delay [TA47: 0.1sec]
Retry?
Within 1 time [NA24]
2 times or more
A
Cassette
ejection

FR6H1158.EPS


A
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
Delay: 20ms
Suction cup HP confirmation
SA4: Close?
Open (HP position NG)
Close
(HP position
OK)
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
12326
Suction cup HP return failure
Suction cup movement
(Load suction → HP)
MA1 [PA28: 164P]: Drive
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Leak valve (SVA1): OFF (Close)
Transport motor magnetization OFF
MB1: Magnetization OFF
MC3: Magnetization OFF
SA1: Open?
Close (Cassette not removed)
Open
(Cassette
removal
completed)
CMOS: No IP before reading
CMOS: No IP before erasure
Call LED not-displayed
LEDCALL: OFF
END

FR6H1159.EPS

## <I/O Locations>


Suction cup driving motor
MA1
Cassette set unit
A unit
Suction cup HP sensor
SA4
Cassette ejection clutch
CLA1
Cassette ejection sensor
SA1
M
Transport motor
MB1
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Transport motor
MC3
Subscanning unit
Z unit
FR6H1238.EPS

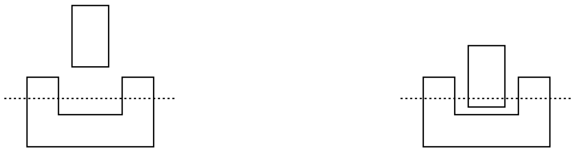
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| LEDCALL | CALL | LED | Indicates that the machine is in "CALL" state. |
| LEDOUT | Processing complete | LED | Indicates that the processing has been completed. |
| LED2 | Progress 2 | LED | Indicates that the progress is "2". |
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |
| SA1 | Cassette ejection sensor | PI (5mm) | Detects that the cassette has been ejected. |
| SA4 | Suction cup HP sensor | PI (5mm) | Detects that the suction cup is in its home position. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| CLA1 | Cassette ejection clutch | Clutch | Power connection for actuating cassette ejection operation. |

TR6H1073.EPS

## <Sensor ON/OFF Status>

SA1/SA4



OFF: Open (not blocked)

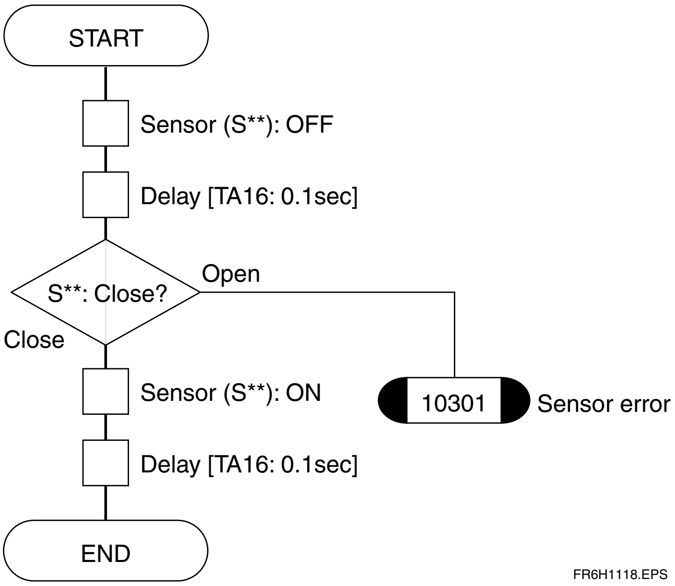
ON: Close (blocked)

FR6H1262.EPS

## 5.2.14 Sensor Confirmation 1/Sensor Confirmation 2

### <Fig. 1 Sensor Confirmation 1 Flow>

A symbol, “S**”, used in the flow is applicable to the sensors listed in the table (Sensor List) below.


START
Sensor (S**): OFF
Delay [TA16: 0.1sec]
S**: Close?
Open
Close
Sensor (S**): ON
10301
Sensor error
Delay [TA16: 0.1sec]
END
FR6H1118.EPS

### <Sensor List>

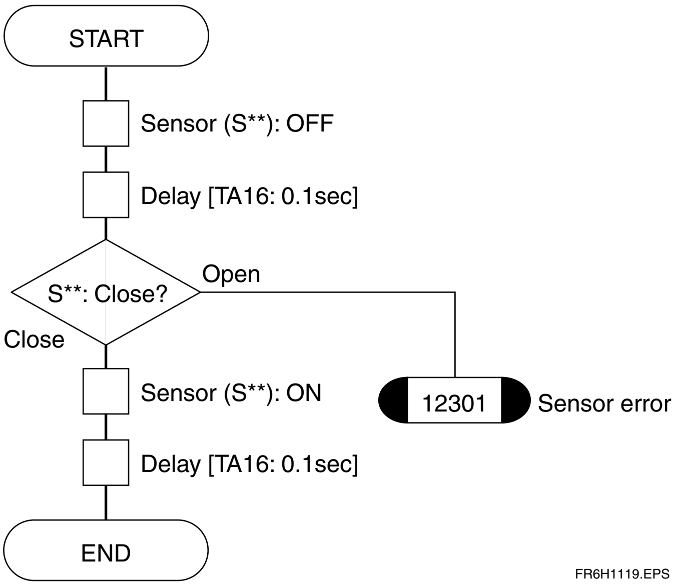
The sensors listed below are covered by “S**”.

| I/O No. | Name | Close status | Open status |
|---|---|---|---|
| SA1 | Cassette ejection sensor | Blocked | Not blocked |
| SA2 | Cassette IN sensor | With cassette | Without cassette |
| SA3 | Cassette hold sensor | Blocked | Not blocked |
| SA4 | Suction cup HP sensor | Blocked | Not blocked |
| SA5 | Suction sensor | Sucked | Leaked |
| SB1 | Cassette inlet IP sensor | IP found | No IP |
| SC1 | Side-positioning HP sensor | Blocked | Not blocked |
| SC2 | Grip release HP sensor | Blocked | Not blocked |
| SC3 | Side-positioning HP sensor | IP found | No IP |
| SC4 | Erasure positioning IP sensor | IP found | No IP |
| SZ2 | Driving-side grip release HP sensor | Blocked | Not blocked |
| SZ3 | Driven-side grip release HP sensor | Blocked | Not blocked |
| SZ4 | Stopper HP sensor | Blocked | Not blocked |
| SZ5 | Dust removal HP sensor | Blocked | Not blocked |

TR6H1070.EPS

## <Fig. 2 Sensor Confirmation 2 Flow>

A symbol, “S**”, used in the flow is applicable to the sensors listed in the table (Sensor List) below.


START
Sensor (S**): OFF
Delay [TA16: 0.1sec]
S**: Close?
Open
Close
Sensor (S**): ON
12301
Sensor error
Delay [TA16: 0.1sec]
END
FR6H1119.EPS

## <Sensor List>

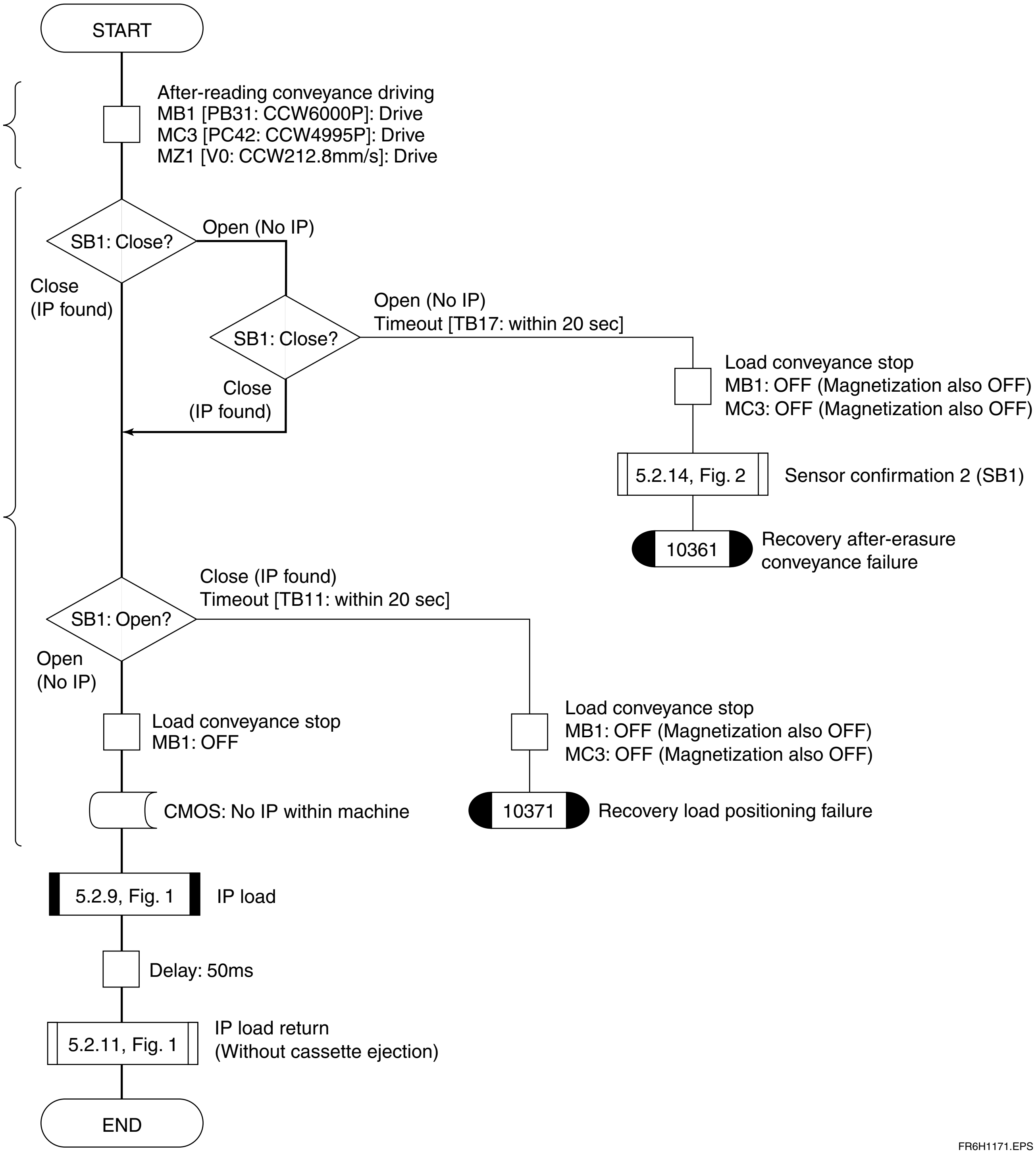
The sensors listed below are covered by “S**”.

| I/O No. | Name | Close status | Open status |
|---|---|---|---|
| SA1 | Cassette ejection sensor | Blocked | Not blocked |
| SA2 | Cassette IN sensor | With cassette | Without cassette |
| SA3 | Cassette hold sensor | Blocked | Not blocked |
| SA4 | Suction cup HP sensor | Blocked | Not blocked |
| SA5 | Suction sensor | Sucked | Leaked |
| SB1 | Cassette inlet IP sensor | IP found | No IP |
| SC1 | Side-positioning HP sensor | Blocked | Not blocked |
| SC2 | Grip release HP sensor | Blocked | Not blocked |
| SC3 | Side-positioning HP sensor | IP found | No IP |
| SC4 | Erasure positioning IP sensor | IP found | No IP |
| SZ2 | Driving-side grip release HP sensor | Blocked | Not blocked |
| SZ3 | Driven-side grip release HP sensor | Blocked | Not blocked |
| SZ4 | Stopper HP sensor | Blocked | Not blocked |
| SZ5 | Dust removal HP sensor | Blocked | Not blocked |

TR6H1070.EPS

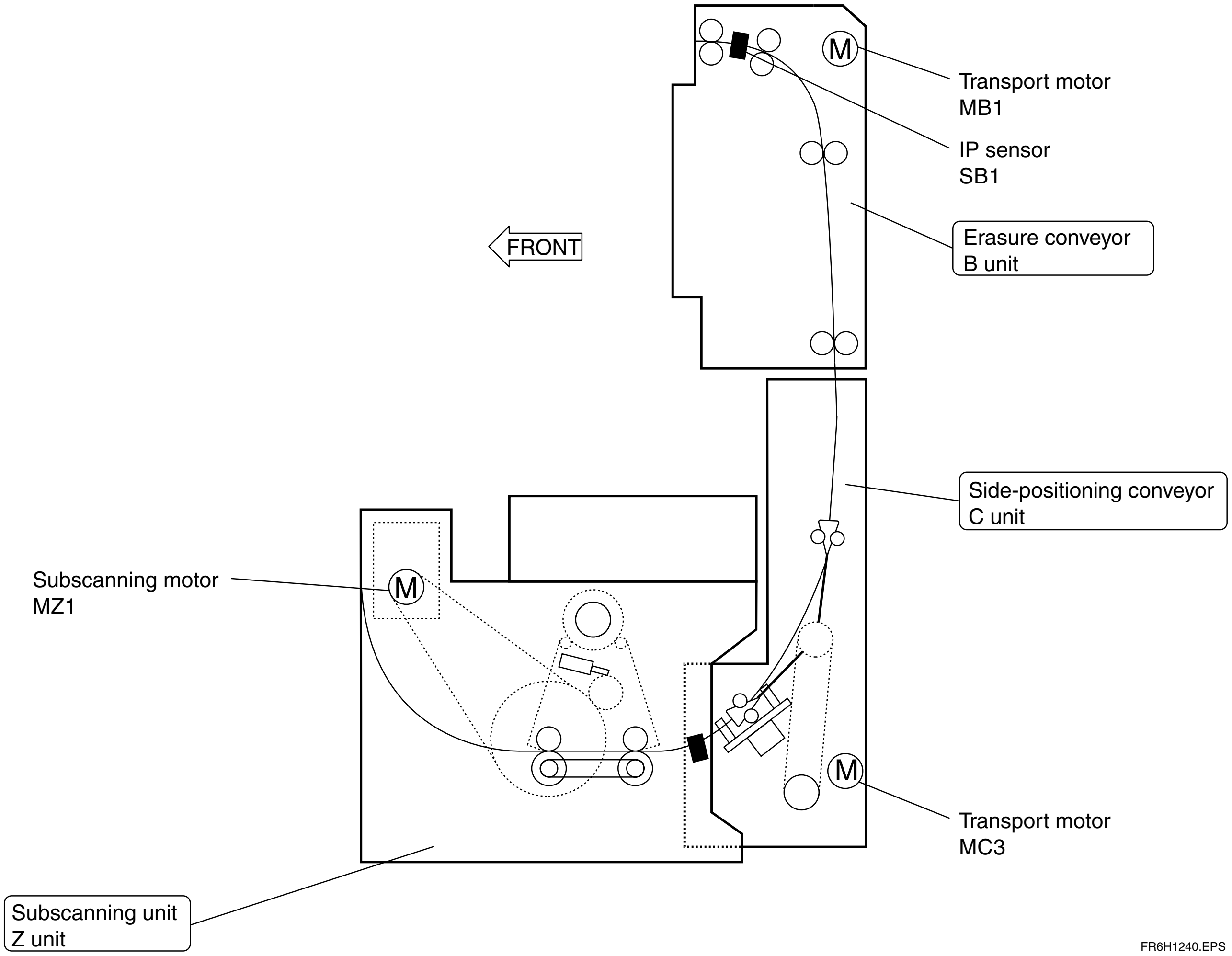
## 5.2.15 Error Handling (Recovery IP Load)

## <Fig. 1 Error Handling Flow>


START
After-reading conveyance driving
MB1 [PB31: CCW6000P]: Drive
MC3 [PC42: CCW4995P]: Drive
MZ1 [V0: CCW212.8mm/s]: Drive
SB1: Close?
Open (No IP)
Close
(IP found)
SB1: Close?
Open (No IP)
Timeout [TB17: within 20 sec]
Close
(IP found)
Load conveyance stop
MB1: OFF (Magnetization also OFF)
MC3: OFF (Magnetization also OFF)
5.2.14, Fig. 2
Sensor confirmation 2 (SB1)
10361
Recovery after-erasure
conveyance failure
Close (IP found)
Timeout [TB11: within 20 sec]
SB1: Open?
Open
(No IP)
Load conveyance stop
MB1: OFF
Load conveyance stop
MB1: OFF (Magnetization also OFF)
MC3: OFF (Magnetization also OFF)
CMOS: No IP within machine
10371
Recovery load positioning failure
5.2.9, Fig. 1
IP load
Delay: 50ms
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
END

FR6H1171.EPS

## <I/O Locations>


Transport motor
MB1
IP sensor
SB1
Erasure conveyor
B unit
FRONT
Side-positioning conveyor
C unit
Subscanning motor
MZ1
M
M
M
Transport motor
MC3
Subscanning unit
Z unit

FR6H1240.EPS

## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| SB1 | Cassette inlet IP sensor | PI (19mm) | Detects the presence of an IP. |
| MB1 | IP transport motor | Pulse motor | Conveys the IP. |
| MC3 | IP transport motor | Pulse motor | Conveys the IP. |
| MZ1 | Subscanning motor | FFM | Conveys the IP. |

TR6H1083.EPS

## <Sensor ON/OFF Status>

SB1

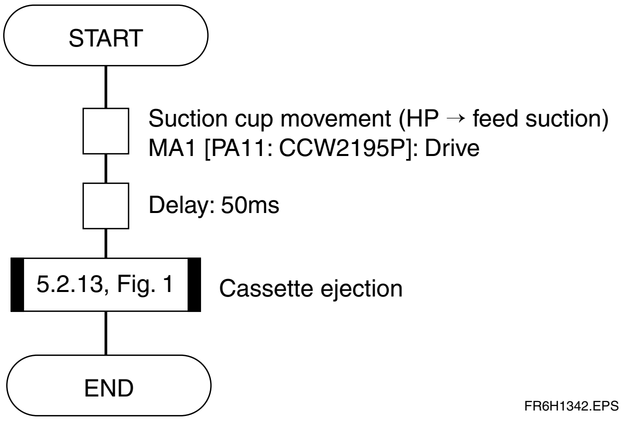
OFF: Open (no IP)

ON: Close (IP found)

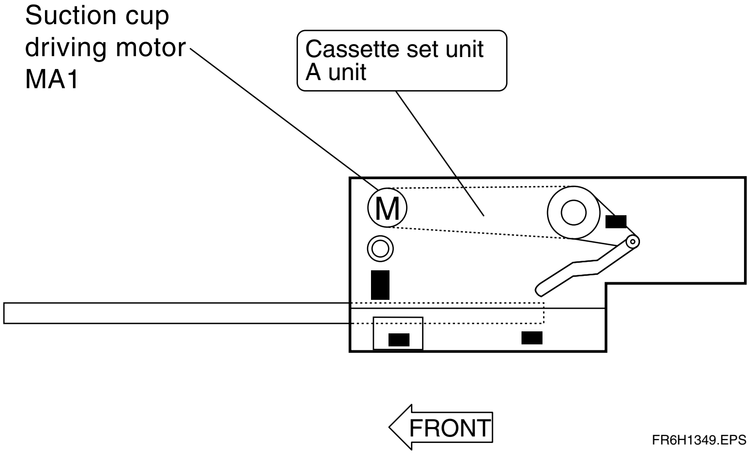
FR6H1264.EPS

## 5.2.16 Cassette Ejection (After Home Positioning)

## <Fig. 1 Cassette Ejection (After Home Positioning) Flow>


START
Suction cup movement (HP → feed suction)
MA1 [PA11: CCW2195P]: Drive
Delay: 50ms
5.2.13, Fig. 1
Cassette ejection
END
FR6H1342.EPS

## <I/O Locations>


Suction cup
driving motor
MA1
Cassette set unit
A unit
M
FRONT

FR6H1349.EPS

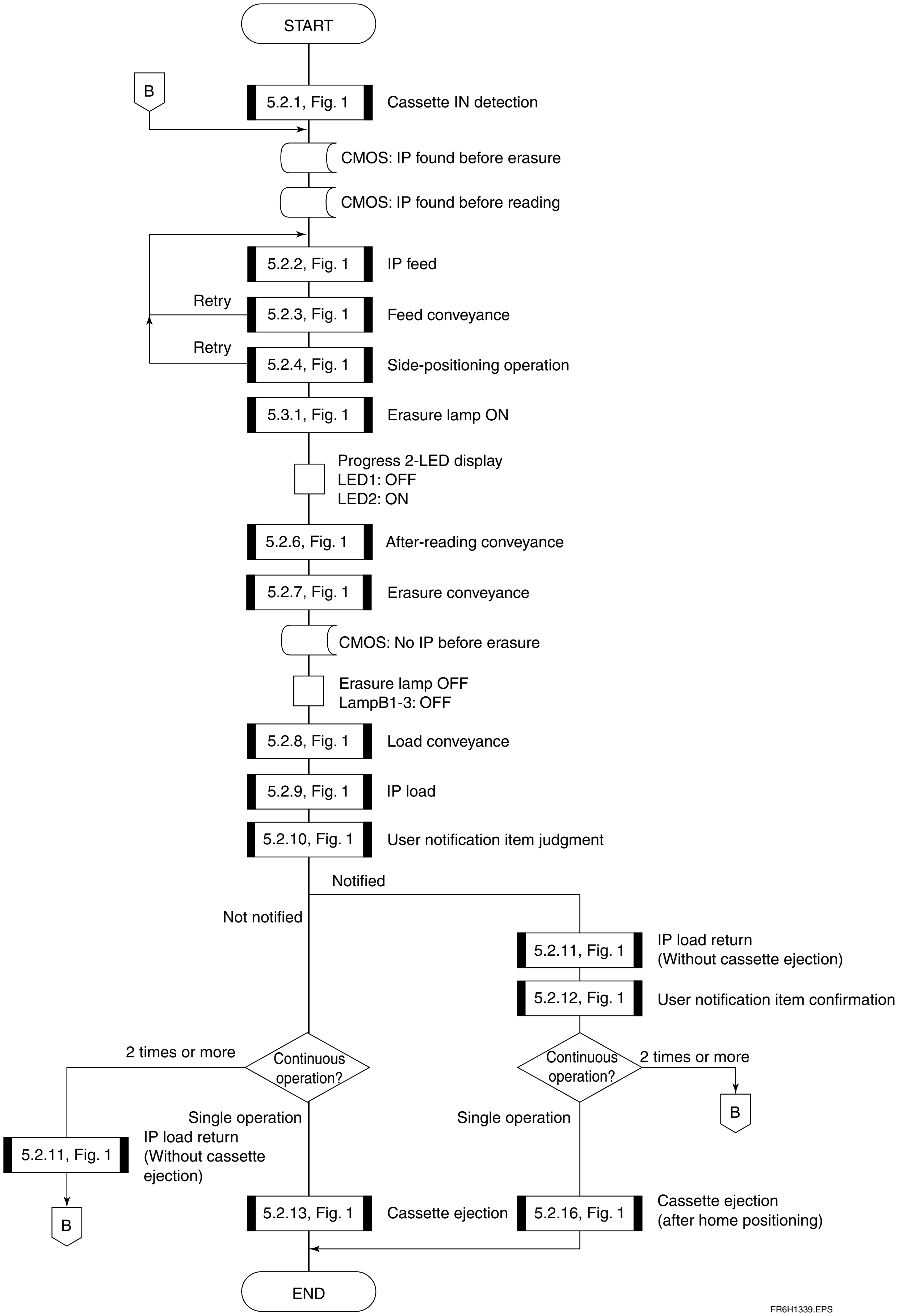
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |

TR6H1097.EPS

# 5.3 Secondary Erasure Flow

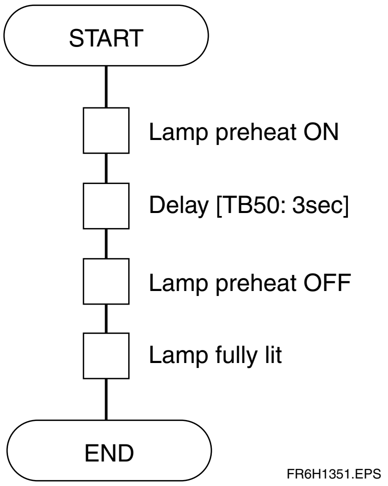
## <Fig. 1 Overall Summary Flow>


START
B
5.2.1, Fig. 1
Cassette IN detection
CMOS: IP found before erasure
CMOS: IP found before reading
5.2.2, Fig. 1
IP feed
Retry
5.2.3, Fig. 1
Feed conveyance
Retry
5.2.4, Fig. 1
Side-positioning operation
5.3.1, Fig. 1
Erasure lamp ON
Progress 2-LED display
LED1: OFF
LED2: ON
5.2.6, Fig. 1
After-reading conveyance
5.2.7, Fig. 1
Erasure conveyance
CMOS: No IP before erasure
Erasure lamp OFF
LampB1-3: OFF
5.2.8, Fig. 1
Load conveyance
5.2.9, Fig. 1
IP load
5.2.10, Fig. 1
User notification item judgment
Notified
Not notified
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
5.2.12, Fig. 1
User notification item confirmation
2 times or more
Continuous operation?
Continuous operation?
2 times or more
B
Single operation
Single operation
IP load return
(Without cassette ejection)
5.2.11, Fig. 1
B
5.2.13, Fig. 1
Cassette ejection
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
END

FR6H1339.EPS

## 5.3.1 Erasure Lamp Lighting

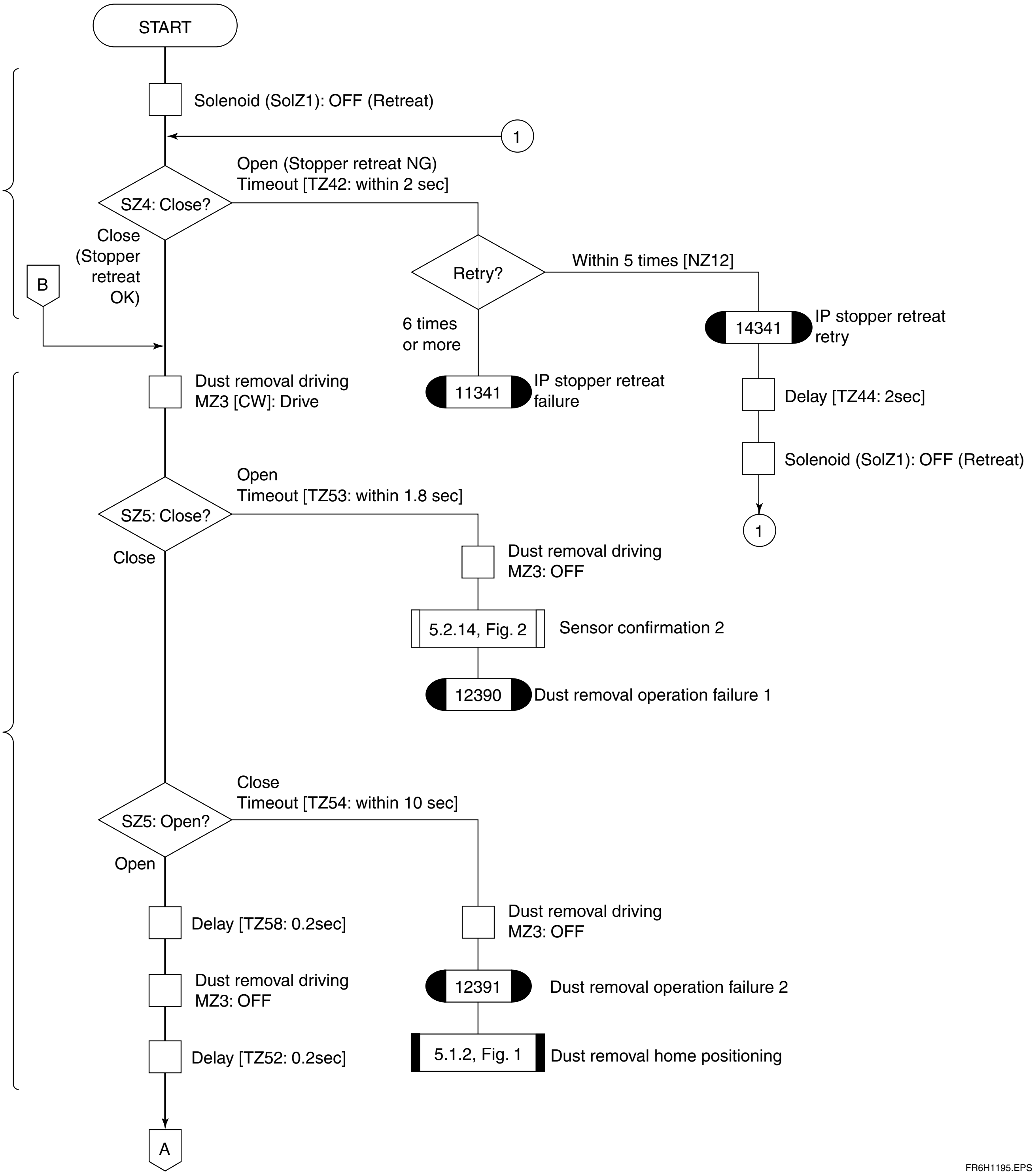
## <Fig. 1 Erasure Lamp Lighting Flow>


START
Lamp preheat ON
Delay [TB50: 3sec]
Lamp preheat OFF
Lamp fully lit
END
FR6H1351.EPS

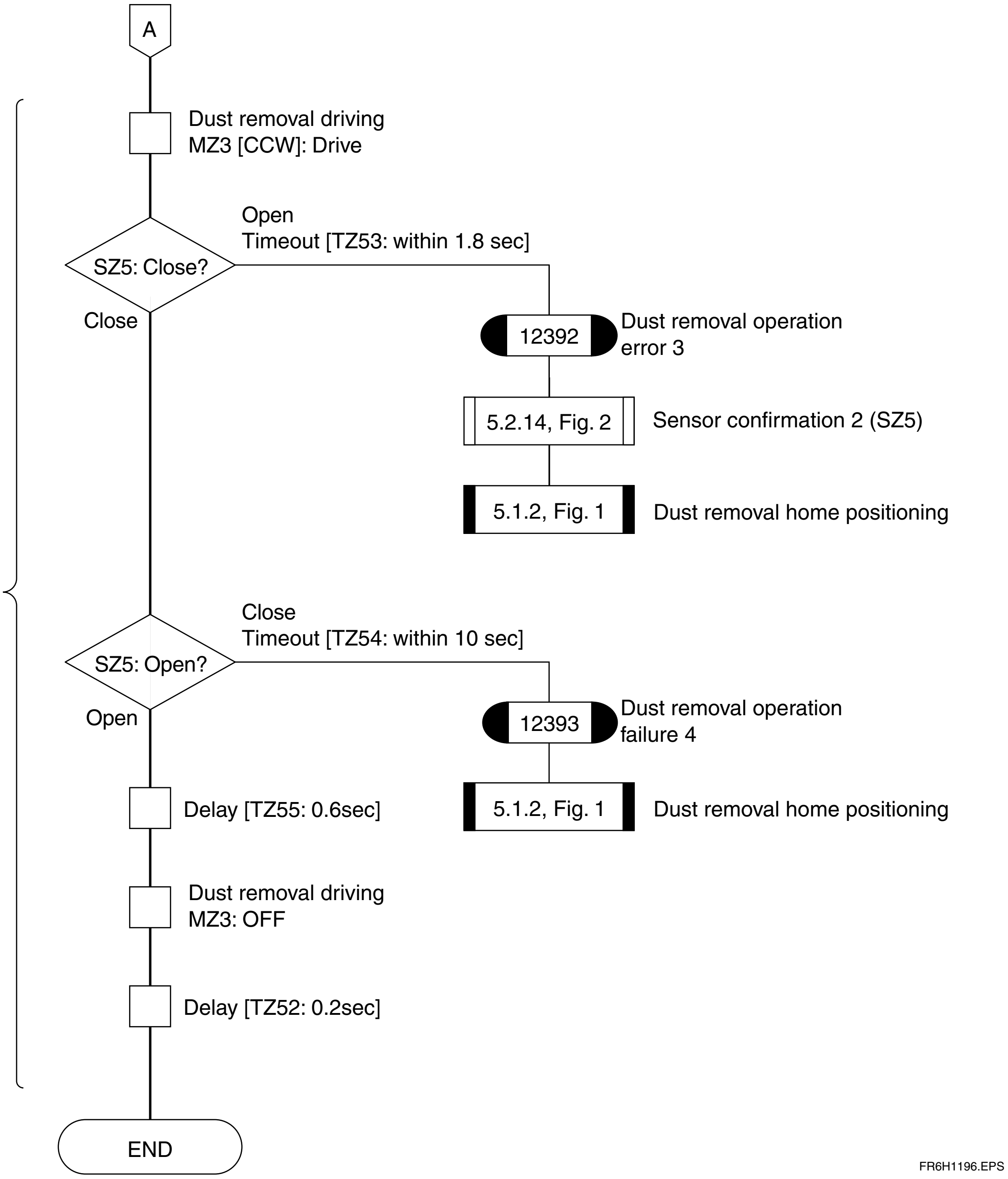
# 5.4 User Utility Operation

## 5.4.1 Dust Removal

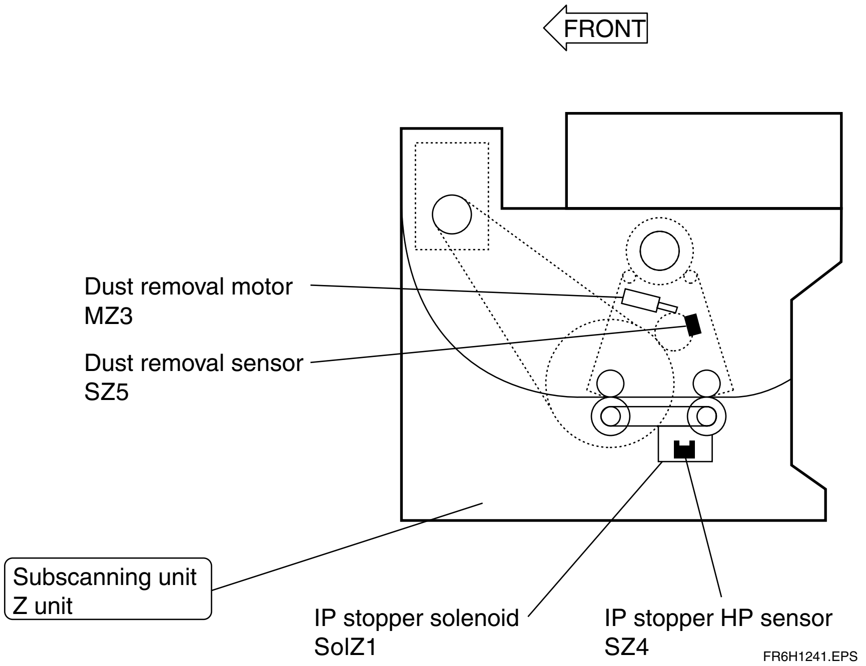
### <Fig. 1 Dust Removal Flow>


START
Solenoid (SolZ1): OFF (Retreat)
1
SZ4: Close?
Open (Stopper retreat NG)
Timeout [TZ42: within 2 sec]
Close
(Stopper
retreat
OK)
B
Retry?
Within 5 times [NZ12]
6 times
or more
14341
IP stopper retreat
retry
11341
IP stopper retreat
failure
Delay [TZ44: 2sec]
Solenoid (SolZ1): OFF (Retreat)
1
Dust removal driving
MZ3 [CW]: Drive
SZ5: Close?
Open
Timeout [TZ53: within 1.8 sec]
Close
Dust removal driving
MZ3: OFF
5.2.14, Fig. 2
Sensor confirmation 2
12390
Dust removal operation failure 1
SZ5: Open?
Close
Timeout [TZ54: within 10 sec]
Open
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
12391
Dust removal operation failure 2
5.1.2, Fig. 1
Dust removal home positioning
A

FR6H1195.EPS


A
Dust removal driving
MZ3 [CCW]: Drive
Open
Timeout [TZ53: within 1.8 sec]
SZ5: Close?
Close
12392
Dust removal operation
error 3
5.2.14, Fig. 2
Sensor confirmation 2 (SZ5)
5.1.2, Fig. 1
Dust removal home positioning
Close
Timeout [TZ54: within 10 sec]
SZ5: Open?
Open
12393
Dust removal operation
failure 4
Delay [TZ55: 0.6sec]
5.1.2, Fig. 1
Dust removal home positioning
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
END
FR6H1196.EPS

## <I/O Locations>


FRONT
Dust removal motor
MZ3
Dust removal sensor
SZ5
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4
FR6H1241.EPS

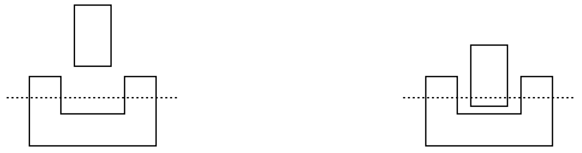
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MZ3 | Dust removal | Brushless DC motor | Removes dust on the light-collecting guide and mirror. |
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SZ5 | Dust removal HP sensor | PI (5mm) | Detects that the dust removal brush is in its home position. |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |

TR6H1089.EPS

## <Sensor ON/OFF Status>

SZ4/SZ5



OFF: Open (not blocked)

ON: Close (blocked)

FR6H1265.EPS

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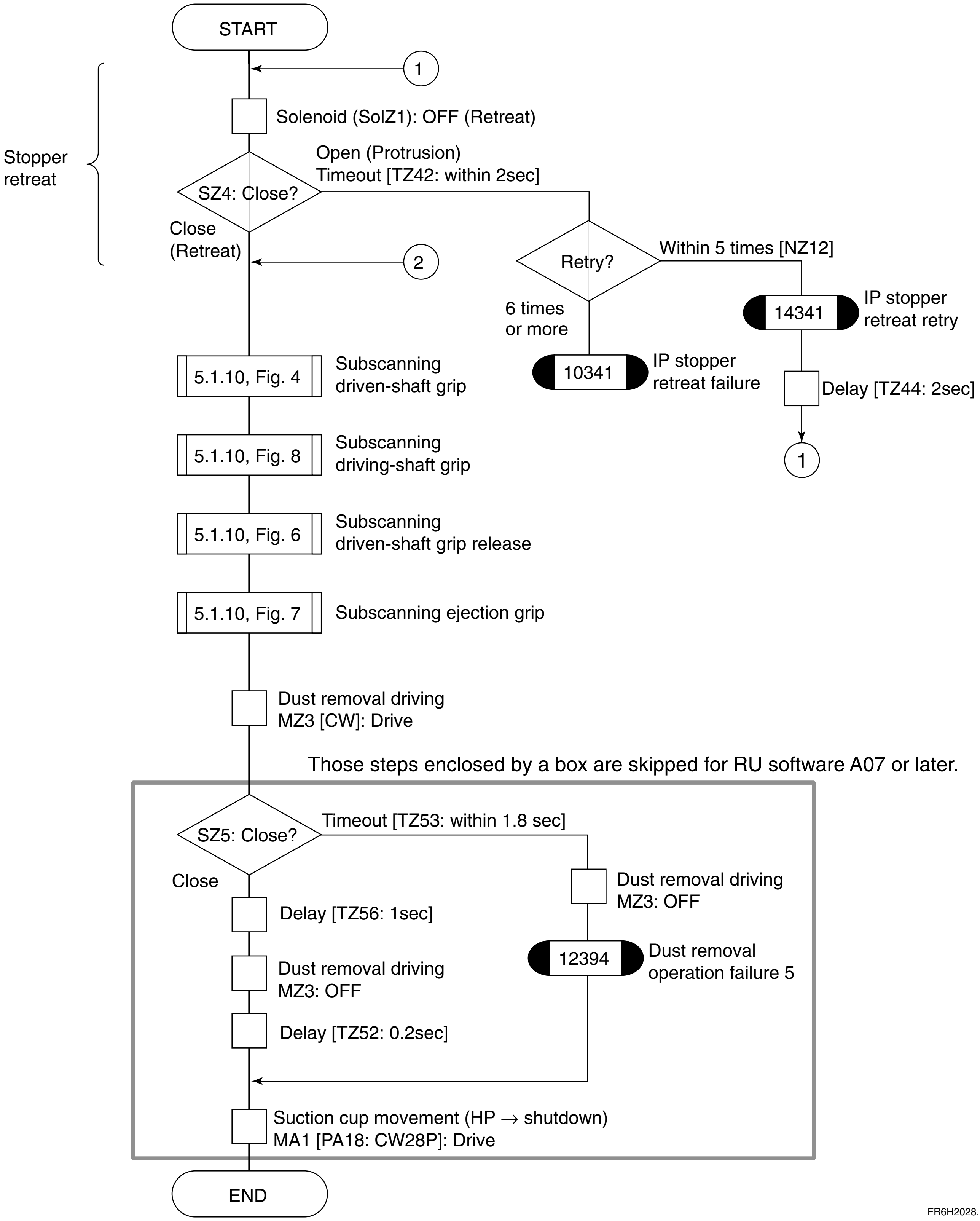
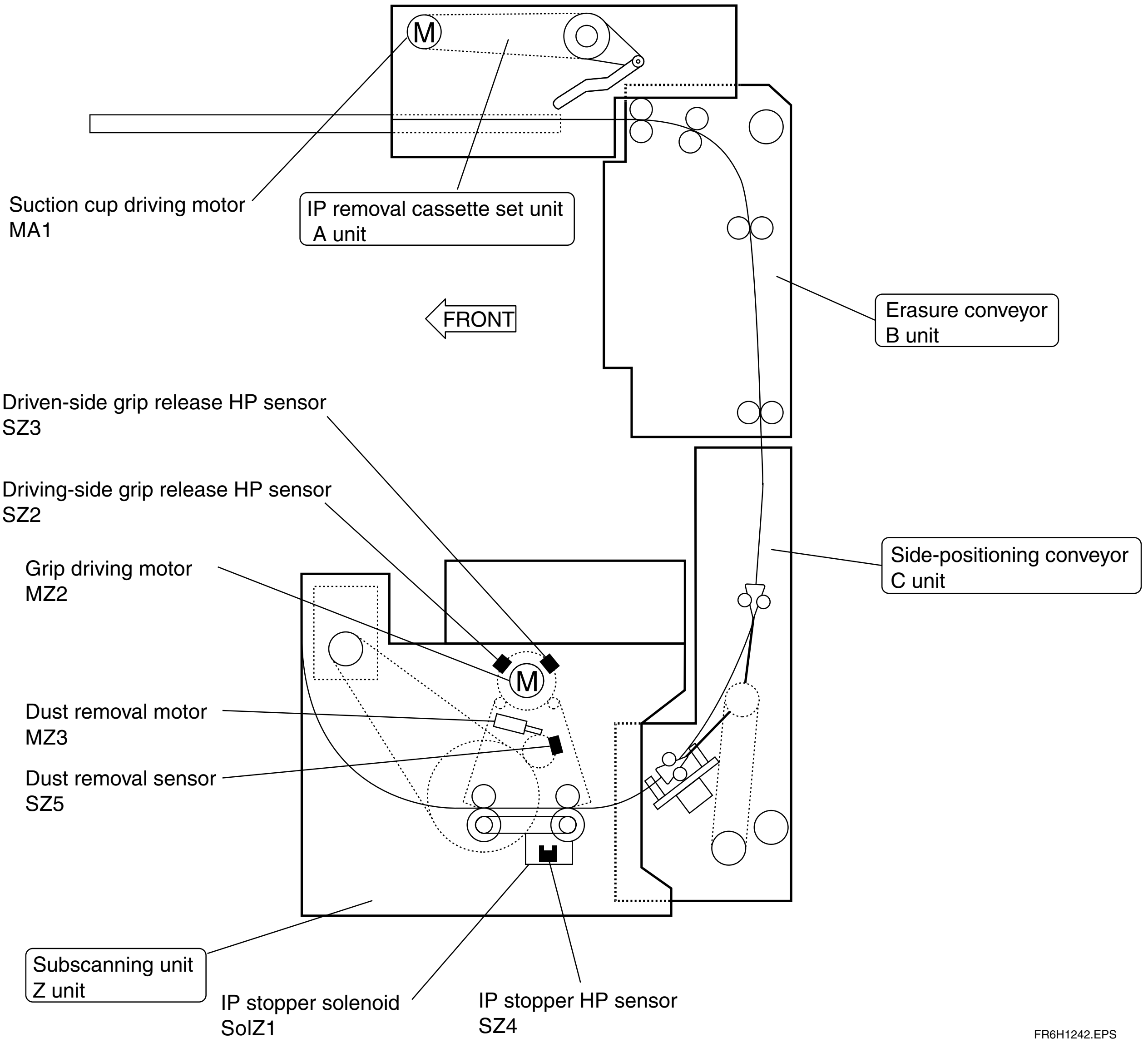
## 5.5 Shutdown Processing Flow

### <Fig. 1 Shutdown Processing Flow>


START
1
Stopper
retreat
Solenoid (SolZ1): OFF (Retreat)
SZ4: Close?
Open (Protrusion)
Timeout [TZ42: within 2sec]
Close
(Retreat)
2
Retry?
Within 5 times [NZ12]
6 times
or more
14341
IP stopper
retreat retry
10341
IP stopper
retreat failure
Delay [TZ44: 2sec]
1
5.1.10, Fig. 4
Subscanning
driven-shaft grip
5.1.10, Fig. 8
Subscanning
driving-shaft grip
5.1.10, Fig. 6
Subscanning
driven-shaft grip release
5.1.10, Fig. 7
Subscanning ejection grip
Dust removal driving
MZ3 [CW]: Drive
Those steps enclosed by a box are skipped for RU software A07 or later.
SZ5: Close?
Timeout [TZ53: within 1.8 sec]
Close
Dust removal driving
MZ3: OFF
Delay [TZ56: 1sec]
12394
Dust removal
operation failure 5
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Suction cup movement (HP → shutdown)
MA1 [PA18: CW28P]: Drive
END

FR6H2028.EPS

## <I/O Locations>


Suction cup driving motor
MA1
IP removal cassette set unit
A unit
FRONT
Erasure conveyor
B unit
Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip driving motor
MZ2
Side-positioning conveyor
C unit
Dust removal motor
MZ3
Dust removal sensor
SZ5
M
M
Subscanning unit
Z unit
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4
FR6H1242.EPS

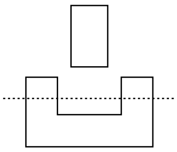
## <I/O Table>

| Symbol | Name | Type | Function |
|---|---|---|---|
| MZ2 | Grip driving | DC motor | Speed correction capability (equivalent to DPR). |
| MZ3 | Dust removal | Brushless DC motor | Removes dust on the light-collecting guide and mirror. |
| SZ2 | Driving-side grip release HP sensor | PI (5mm) | Detects that the driving side is in grip released mode. |
| SZ3 | Driven-side grip release HP sensor | PI (5mm) | Detects that the driven side is in grip released mode. |
| SZ4 | Stopper HP sensor | PI (5mm) | Detects that the IP stopper is in its home position. |
| SZ5 | Dust removal HP sensor | PI (5mm) | Detects that the dust removal brush is in its home position. |
| SolZ1 | Stopper driving SOL | Power-down solenoid | Protrudes the stopper when turned ON. |
| MA1 | Suction cup driving motor | Pulse motor | Opens the rear cover of the cassette and moves the roller. |

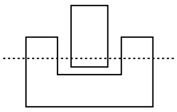
TR6H1062.EPS

# <Sensor ON/OFF Status>

SZ2/SZ3/SZ4/SZ5



OFF: Open (not blocked)



ON: Close (blocked)

FR6H1266.EPS

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# CR-IR346RU Service Manual

## Troubleshooting (MT)

# CR-IR346RU Service Manual – Contents

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## Control Sheet

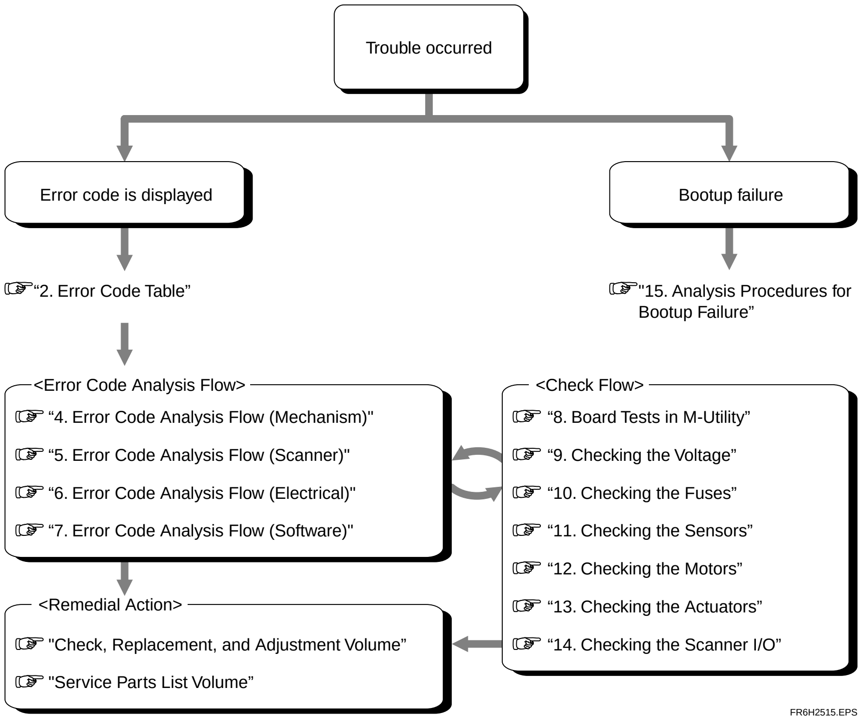
| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10/10/2000 | 00 | New release (FM2887) | All pages |
| 08/30/2001 | 01 | Corrections (FM3058) | All pages |
| 12/20/2001 | 03 | Corrections (FM3277) | MT-1, 132–140, 194 |

# 1. Overview of Troubleshooting

## 1.1 Flow of Troubleshooting

### ■ Overall Flow

When a trouble occurs, refer to the Troubleshooting Volume along the flow shown below to take remedial action, such as parts replacement, as needed.


Trouble occurred
Error code is displayed
Bootup failure
☞"2. Error Code Table"
☞"15. Analysis Procedures for Bootup Failure"
<Error Code Analysis Flow>
☞ "4. Error Code Analysis Flow (Mechanism)"
☞ "5. Error Code Analysis Flow (Scanner)"
☞ "6. Error Code Analysis Flow (Electrical)"
☞ "7. Error Code Analysis Flow (Software)"
<Check Flow>
☞ "8. Board Tests in M-Utility"
☞ "9. Checking the Voltage"
☞ "10. Checking the Fuses"
☞ "11. Checking the Sensors"
☞ "12. Checking the Motors"
☞ "13. Checking the Actuators"
☞ "14. Checking the Scanner I/O"
<Remedial Action>
☞ "Check, Replacement, and Adjustment Volume"
☞ "Service Parts List Volume"

FR6H2515.EPS

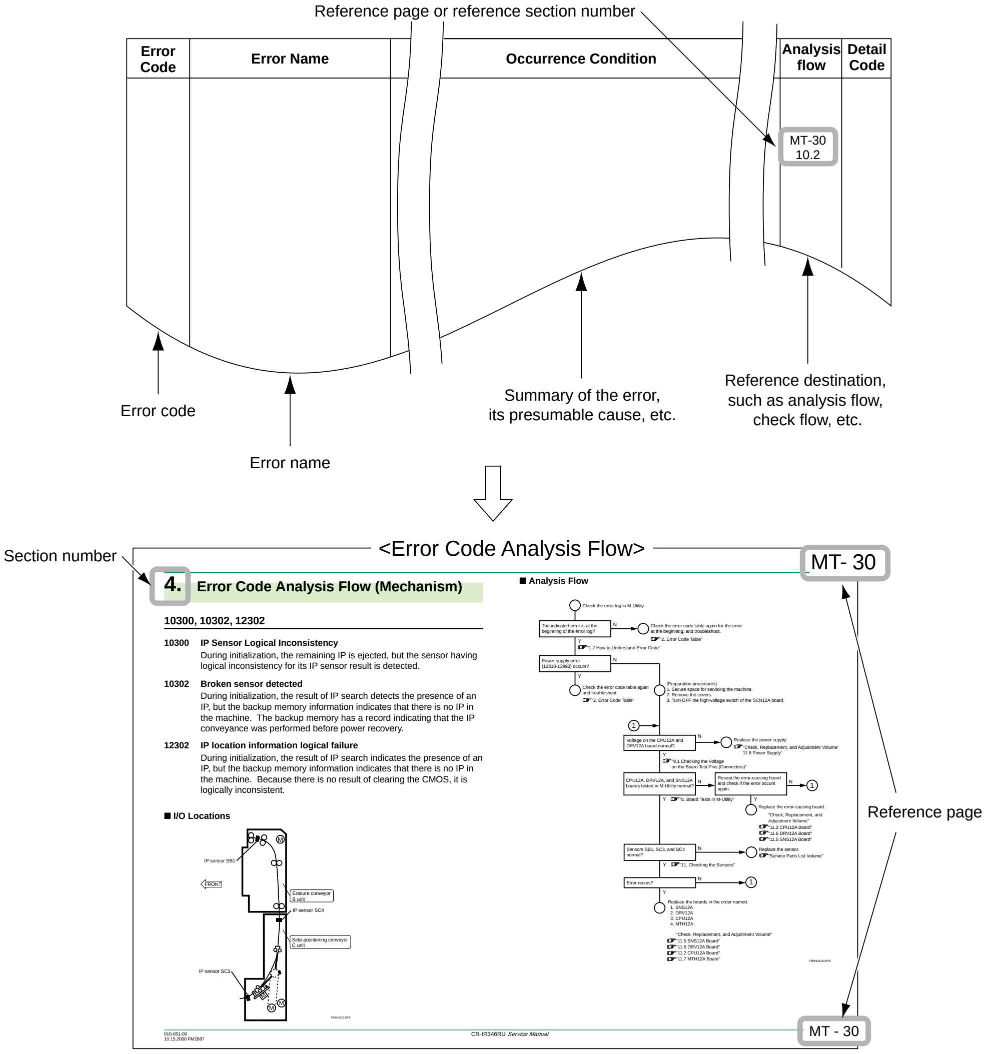
### ■ How to Use the Analysis Flow

(1) Check the error code.

☞ "1.2 How to Understand Error Log"

(2) Refer to the Error Code Table.

If any reference page is found in the "Error Code Analysis Flow" column of the Error Code Table, proceed to its relevant error code analysis flow.


Reference page or reference section number
Error Code
Error Name
Occurrence Condition
Analysis flow
Detail Code
MT-30
10.2
Error code
Error name
Summary of the error, its presumable cause, etc.
Reference destination, such as analysis flow, check flow, etc.
Section number
<Error Code Analysis Flow>
MT- 30
Reference page
MT - 30
IP sensor SB1
FRONT
Erasure conveyor B unit
IP sensor SC4
Side-positioning conveyor C unit
IP sensor SC3
M
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Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Y
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
☞"1.2 How to Understand Error Code"
Power supply error (12810-12893) occurs?
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
①
Voltage on the CPU12A and DRV12A board normal?
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards tested in M-Utility normal?
Reseat the error-causing board and check if the error occurs again.
☞"8. Board Tests in M-Utility"
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensors SB1, SC3, and SC4 normal?
Replace the sensor.
☞"Service Parts List Volume"
☞"11. Checking the Sensors"
Error recurs?
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
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**4. Error Code Analysis Flow (Mechanism)**

**10300, 10302, 12302**

**10300 IP Sensor Logical Inconsistency**
During initialization, the remaining IP is ejected, but the sensor having logical inconsistency for its IP sensor result is detected.

**10302 Broken sensor detected**
During initialization, the result of IP search detects the presence of an IP, but the backup memory information indicates that there is no IP in the machine. The backup memory has a record indicating that the IP conveyance was performed before power recovery.

**12302 IP location information logical failure**
During initialization, the result of IP search indicates the presence of an IP, but the backup memory information indicates that there is no IP in the machine. Because there is no result of clearing the CMOS, it is logically inconsistent.

**■ I/O Locations**

**■ Analysis Flow**

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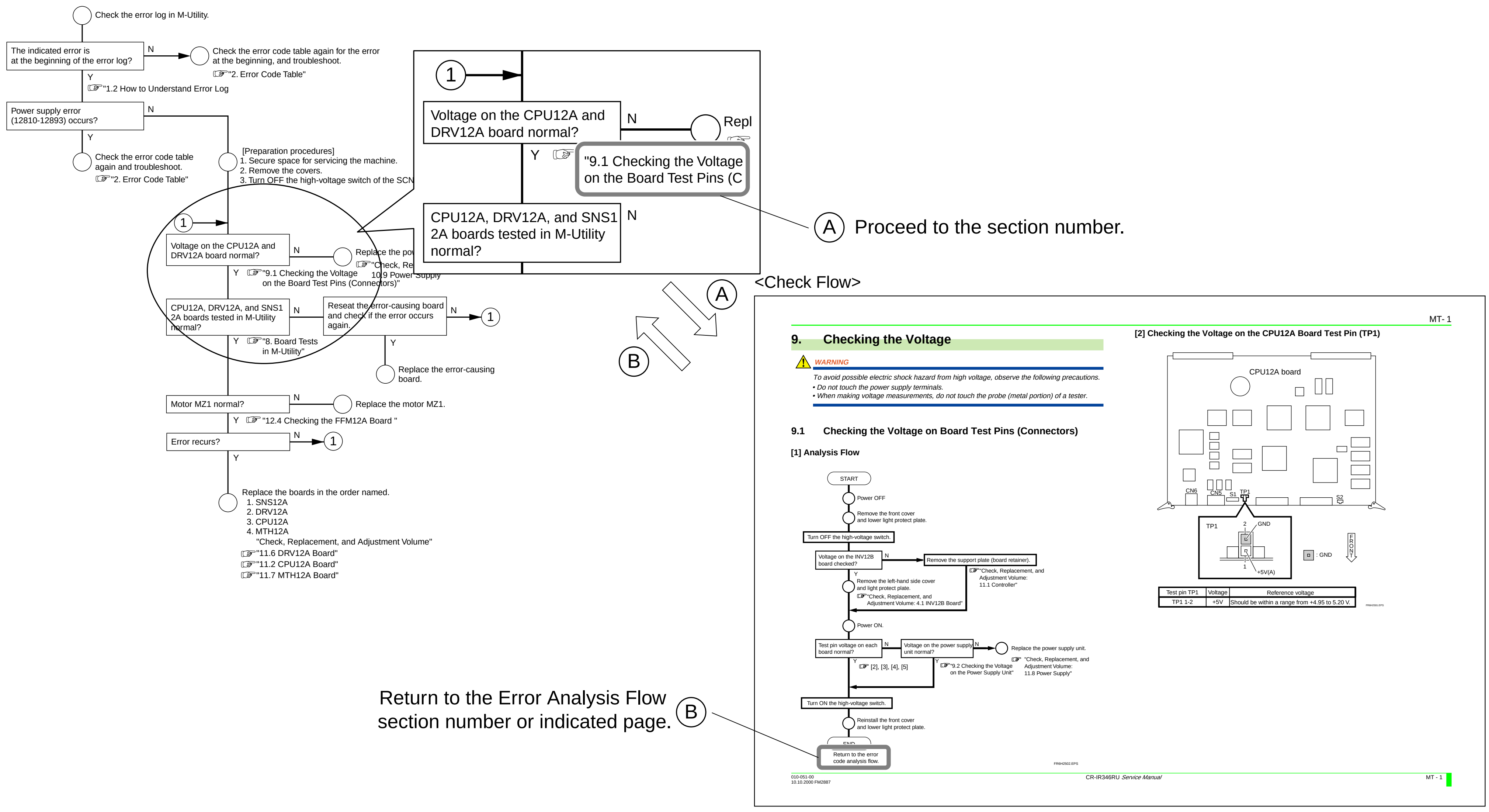
(3) Troubleshoot according to the analysis flow.

◆ ***NOTE*** ◆

*When troubleshooting, refer to the Check Flow that describes the checking procedures for troubleshooting individual I/O parts, as well as “Check, Replacement, and Adjustment Volume.”*

<Error Code Analysis Flow>


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the pow
☞"Check, Re
10.9 Power Supply
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
Motor MZ1 normal?
N
Replace the motor MZ1.
Y
☞"12.4 Checking the FFM12A Board "
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
1
Voltage on the CPU12A and DRV12A board normal?
N
Repl
Y
☞
"9.1 Checking the Voltage on the Board Test Pins (C
CPU12A, DRV12A, and SNS12A boards tested in M-Utility normal?
N
A
Proceed to the section number.
A
B
<Check Flow>
Return to the Error Analysis Flow section number or indicated page.
B

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# 9. Checking the Voltage

**WARNING**

*To avoid possible electric shock hazard from high voltage, observe the following precautions.*

- *Do not touch the power supply terminals.*
- *When making voltage measurements, do not touch the probe (metal portion) of a tester.*

## 9.1 Checking the Voltage on Board Test Pins (Connectors)

### [1] Analysis Flow

START
Power OFF
Remove the front cover and lower light protect plate.
Turn OFF the high-voltage switch.
Voltage on the INV12B board checked?
N: Remove the support plate (board retainer). ☞"Check, Replacement, and Adjustment Volume: 11.1 Controller"
Y: Remove the left-hand side cover and light protect plate. ☞"Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"
Power ON.
Test pin voltage on each board normal?
Y: ☞ [2], [3], [4], [5]
N: Voltage on the power supply unit normal?
Y: ☞"9.2 Checking the Voltage on the Power Supply Unit"
N: Replace the power supply unit. ☞ "Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Turn ON the high-voltage switch.
Reinstall the front cover and lower light protect plate.
END
Return to the error code analysis flow.

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### [2] Checking the Voltage on the CPU12A Board Test Pin (TP1)

CPU12A board
CN6
CN5
S1
TP1
S2
TP1
2
GND
1
+5V(A)
: GND
FRONT

| Test pin TP1 | Voltage | Reference voltage |
|---|---|---|
| TP1 1-2 | +5V | Should be within a range from +4.95 to 5.20 V. |

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## 1.2 How to Understand Error Log

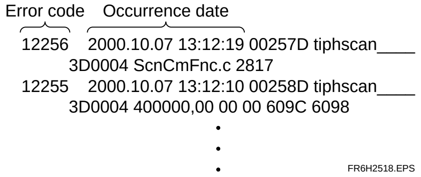
When an error code is displayed, check the error log.

### ■ How to Understand the Error Log List

When multiple errors occurred, the error at the beginning that occurred at the same time (with a margin of about 2 minutes) is the most likely cause that is directly responsible for the trouble.

Check the error log to see which is the error at the beginning.

#### ● Error log format



```
12256    2000.10.07 13:12:19 00257D tiphscan____
         3D0004 ScnCmFnc.c 2817
12255    2000.10.07 13:12:10 00258D tiphscan____
         3D0004 400000,00 00 00 609C 6098
                          •
                          •
                          •
```

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#### ● How to identify the error code at the beginning

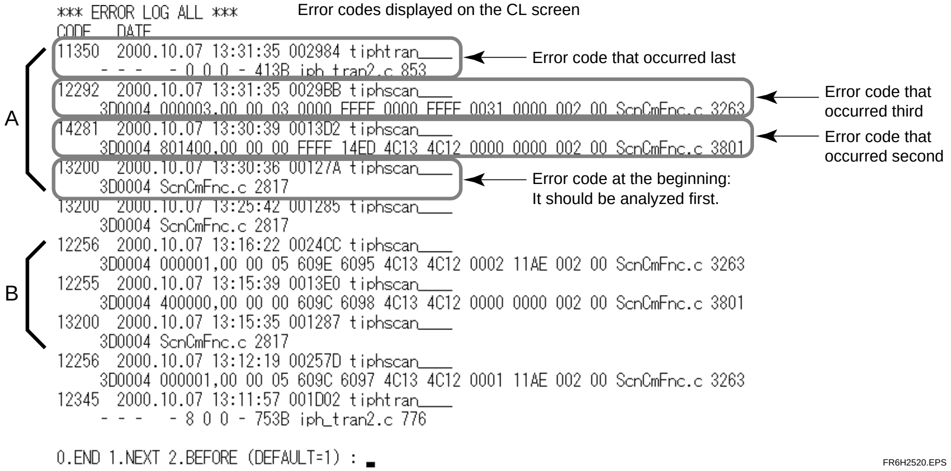
The error log presented below is an example where two causes (A and B) were logged.

- Errors that occurred at the same time (with a margin of about two minutes) are categorized as the same error occurrence group.
- An error that occurred first (at the earliest time) within a certain error occurrence group is considered as the first-occurred error.

(Example)

- Error occurrence groups A and B are judged as separate error occurrence groups, because the difference between their error occurrence times is 14 minutes.
- The error that first occurred in group A is “13200”.

Below is shown, by way of example, how to identify the error code for software version A02.



Error codes displayed on the CL screen

```
*** ERROR LOG ALL ***
CODE   DATE
11350  2000.10.07 13:31:35 002984 tiphtran____
         - - -    - 0 0 0 - 413B iph_tran2.c 853
12292  2000.10.07 13:31:35 0029BB tiphscan____
         3D0004 000003,00 00 03 0000 FFFF 0000 FFFF 0031 0000 002 00 ScnCmFnc.c 3263
14281  2000.10.07 13:30:39 0013D2 tiphscan____
         3D0004 801400,00 00 00 FFFF 14ED 4C13 4C12 0000 0000 002 00 ScnCmFnc.c 3801
13200  2000.10.07 13:30:36 00127A tiphscan____
         3D0004 ScnCmFnc.c 2817
13200  2000.10.07 13:25:42 001285 tiphscan____
         3D0004 ScnCmFnc.c 2817
12256  2000.10.07 13:16:22 0024CC tiphscan____
         3D0004 000001,00 00 05 609E 6095 4C13 4C12 0002 11AE 002 00 ScnCmFnc.c 3263
12255  2000.10.07 13:15:39 0013E0 tiphscan____
         3D0004 400000,00 00 00 609C 6098 4C13 4C12 0000 0000 002 00 ScnCmFnc.c 3801
13200  2000.10.07 13:15:35 001287 tiphscan____
         3D0004 ScnCmFnc.c 2817
12256  2000.10.07 13:12:19 00257D tiphscan____
         3D0004 000001,00 00 05 609C 6097 4C13 4C12 0001 11AE 002 00 ScnCmFnc.c 3263
12345  2000.10.07 13:11:57 001D02 tiphtran____
         - - -    - 8 0 0 - 753B iph_tran2.c 776

0.END 1.NEXT 2.BEFORE (DEFAULT=1) : ▄
```

Error code that occurred last

Error code that occurred third

Error code that occurred second

Error code at the beginning:
It should be analyzed first.

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Note, however, that the display of the error log differs depending on the software version.

- Display: For A02

```
*** ERROR LOG ALL ***CODE DATE
13603 2000.08.25 14:51:45 00DC05 toammoni_3D0004 commonitar_Op.c 258
10921 2000.08.25 14:50:33 00C014 toamerrsnd_0 microtfnc,c 2138
       •
       •
       •
10921 2000.08.25 14:45:25 00C013 toamerrsnd_0.END 1.NEXT(DEFAULT=1) : 1
CODE DATE
13603 2000.08.25 14:20:15 00DC05 toammoni_3D0004 commonitar_Op.c 258
10921 2000.08.25 14:05:01 00C014 toamerrsnd_0 microtfnc,c 2138
       •
       •
       •
10921 2000.08.25 13:50:30 00C013 toamerrsnd_0.END 1.NEXT(DEFAULT=1) : 0
```

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- Display: For A03 and A04

```
*** ERROR LOG ALL ***CODE DATE
[13603] 2000/08/25 14:51:45 00DC05 toammoni_:3D0004 commonitar_Op.c 258
[10921] 2000/08/25 14:50:33 00C014 toamerrsnd_:0 microtfnc,c 2138
       •
       •
       •
[10921] 2000/08/25 14:45:25 00C013 toamerrsnd_0.END 1.NEXT(DEFAULT=1) : 1
CODE DATE
[13603] 2000/08/25 14:20:15 00DC05 toammoni_:3D0004 commonitar_Op.c 258
[10921] 2000/08/25 14:05:01 00C014 toamerrsnd_:0 microtfnc,c 2138
       •
       •
       •
[10921] 2000/08/25 13:50:30 00C013 toamerrsnd_0.END 1.NEXT(DEFAULT=1) : 0
```

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- Display: For A05

```
*** ERROR LOG ALL ***CODE DATE
[13603] 2000/08/25 14:51:45 00DC05 <SR> T02:3D0004 commonitar_Op.c 258
[10921] 2000/08/25 14:50:33 00C014 <BR> T99:0 microtfnc,c 2138
       •
       •
       •
[10921] 2000/08/25 14:45:25 00C013 <BR> T90.END 1.NEXT(DEFAULT=1) : 1
CODE DATE
[13603] 2000/08/25 14:20:15 00DC05 <SW> T02:3D0004 commonitar_Op.c 258
[10921] 2000/08/25 14:05:01 00C014 <BR> T99:0 microtfnc,c 2138
       •
       •
       •
[10921] 2000/08/25 13:50:30 00C013 <BR> T990.END 1.NEXT(DEFAULT=1) : 0
```

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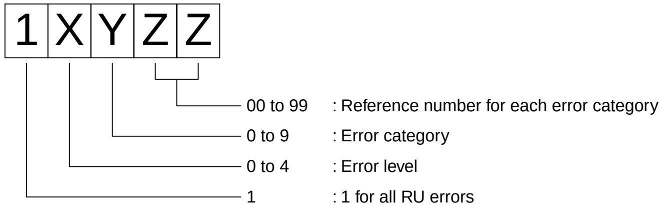
## ■ Error Code Detail



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### ● X: Error level

Error level notations

FATAL error: 0 or 9

- The user is notified of an error occurrence.
- Level of error where the routine processing cannot be resumed.
- It is necessary to immediately troubleshoot and take remedial action.

WARNING: 2

- An error is logged, but the user is not notified.
- Level of error where the function associated with the error is rendered unusable.
- It is necessary to immediately troubleshoot and take remedial action.

WARNING: 1

- The user is notified of an error occurrence.
- Errors that occur due to erroneous user operation (incorrect loading of the cassette or IP, etc.).
- If this level of error occurred at the same time with another level of warning, it is necessary to troubleshoot and take remedial action.

WARNING: 4

- An error is logged, but the user is not notified.
- Errors that occur when a retry operation is performed.
- If the same error occurs frequently and if this level of error occurs at the same time with another level of warning, it is necessary to troubleshoot and take remedial action.

WARNING: 3

- An error is logged, but the user is not notified.
- Errors that occur when servicing procedures are performed.

### ● Y: Error category

0: OS (operating system software), libraries
1: Image processing CPU
2: Scanner control
3: Conveyance control
4: Overall control
5: Network control
6: Reserved
7: Electrical/hardware related
8: Reserved
9: Others (software installation, version update, etc.)

### ● ZZ: Reference number

It is managed according to each error category.

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## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10026 | Machine configuration error | During bootup, the configuration file in the flash ROM on the CPU12A board is defective, so that installation is not automatically performed from the FTP server running on the CL. | 6.1 |
| 10100 | Image processing initialization error | When an attempt is made to initialize the image processing section of the CPU board during the machine initialization routine, either of the errors ranging from 12101 to 12108 is detected.<br>Because error, from 12101 to 12108, is detected three times or more, fatal error results. | 8 |
| 10120 | Image processing CPU sequence error | During IP read processing, an attempt is made to activate the sub-CPU (image processing section) of the CPU board, but error, from 12121 or 12125, is detected.<br>Because error, from 12101 to 12108, is detected three times or more, fatal error results. | 8 |
| 10230 | Scanner power supply error during bootup | During bootup, because the connector (CN1 on the PMT12A board, CNE1 on the scanning optics unit, CNE2 on the scanning optics unit, CN1 on the SYN12A board, or CN1 on the LDD12A board) is disconnected, the laser (LDD), start-point detection (SYN), and photomultiplier (PMT) functions are disabled. Because the laser is not enabled, the leading-edge detection (SED) cannot be performed (detail code: D0F603). Note that if the HV is OFF, the detail code is D0F403. | MT-88 |
| 10231 | Scanner power supply error during bootup (1) | During bootup, because +15V is not supplied to the SCN12A board due to blow of the fuse (H11 on the MTH board) or +15V power supply error, most of the functions, except for the polygonal mirror (POL) and laser (LDD), are disabled (detail code: A0DF03). Note that if the HV is OFF, the detail code is A0DD03. | MT-90 |
| 10232 | Scanner power supply error during bootup (2) | During bootup, because the fuse (H12 on the SCN12A board) is blown, the photomultiplier (PMT) and start-point detection (SYN) functions are disabled (detail code: 809603). Note that if the HV is OFF, the detail code is 809403. | MT-92 |
| 10233 | Scanner power supply error during bootup (3) | During bootup, because the fuse (J11 on the MTH12A board) is blown or because -15V is not supplied to the SCN12A board, the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled. Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C1DD03). | MT-94 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10234 | Scanner power supply error during bootup (4) | • During bootup, because the fuse (J12 on the SCN12A board) or the fuse (H12 on the SCN12A board) is blown, ±15V is not supplied to the SCN12A board, and the photomultiplier (PMT), start-point detection (SYN), laser (LDD), and SCN board (PLL) functions are disabled. Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C0DC03).<br>• During bootup, because -15V is not supplied to the SCN12A board due to blow of the fuse (J11 on the MTH12A board) or -15V (SLOT4) power supply error, the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled. Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C0D400).<br>• During bootup, because ±15V is not supplied, except for the laser (LDD), due to blow of the fuse (J11 on the MTH12A board, or J12, H12, or H14 on the SCN board), the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled. Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C0D603). Note that if the HV is OFF, the detail code is C0D400. | MT-96 |
| 10235 | Scanner power supply error during bootup (5) | • During bootup, because 24V is not supplied to the SCN12A board due to blow of the fuse (K11 on the MTH12A board) or 24V (SLOT5) power supply error, the polygonal mirror (POL) function is disabled (detail code: D01403).<br>• During bootup, because the fuses (H14 and A22 on the SCN board) are blown or because 5V is not supplied to the SYN12A board and SED12A board, the leading-edge detection (SED) and start-point detection (SYN) functions are disabled (detail code: C01403). | MT-98 |
| 10236 | Scanner power supply error during bootup (6) | During bootup, because ±15V is not supplied to the SYN12A board, PMT12A board, and LDD12A board due to blow of the fuses (J12 and H12 on the SCN board), the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled. Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: 819603). Note that if the HV is OFF, the detail code is 819403. | MT-100 |
| 10244 | Scanner control board error (4) | For self-diagnostic during bootup, an SCN board diagnostic error associated with polygon error is detected. Because the PLL on the SCN12A does not oscillate, a polygon sync signal cannot be detected. | - |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10261 | Polygon stop/rotation error (1) | During routine processing, error for the polygon lock signal (PONL, POKL) is detected so that the polygonal mirror function is disabled. The start-point detection (SYN) and leading-edge detection (SED) functions are also disabled (detail code: D03403). | MT-112 |
| 10271 | Laser unlit error (1) | During routine processing, the laser (LDD) and start-point detection (SYN) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: 815403). | MT-116 |
| 10281 | Start-point detection error during bootup (1) | During bootup, because the signal from the start-point detection (SYN) is faulty, the SCN12A board does not operate normally (detail code: 801C03). | MT-102 |
| 10283 | Scanning optics unit board error (1) | For self-diagnostics prior to reading during routine processing, an SCN board diagnostic error (C05401 or C07403) associated with polygon error is detected. The laser is unlit due to a disconnected connector at the scanning optics unit, etc., so that an error related to the polygon error occurs, as well. | - |
| 10298 | Before-reading scanner retry error | During routine processing, because the scanner-related error is detected, the IP is returned to the cassette and the scanner is initialized. The routine processing is retried again, but the scanner-related error recurs. | MT-104 |
| 10300 | IP sensor logical inconsistency | During bootup, the remaining IP is ejected, but the sensor having logical inconsistency for its IP sensor result is detected. | MT-52 |
| 10301 | Sensor error | During bootup, the sensor is turned OFF after the timeout of the mechanical operation is detected, but the sensor does not transition to CLOSE. | MT-53 |
| 10302 | Broken wire sensor detected | During bootup, the result of IP search detects the presence of an IP, but the backup memory information indicates that there is no IP in the machine. The backup memory has a record indicating that the IP conveyance was performed before power recovery. | MT-52 |
| 10303 | IP initialization search error | During bootup, the result of location information confirmation for IP search indicates the absence of an IP, but the backup memory information indicates the presence of an IP in the machine. System shutdown is selected via user intervention. | MT-54 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10304 | IP conveyance error During bootup (1) | During bootup, the IP search detects the presence of an IP. The CLOSE state of the SB1, SC3, and SC4 is detected, and the MB1 and MC3 are driven, but any of the sensors does not transition to OPEN. The backup memory has a record indicating the presence of an IP in the machine. | MT-54 |
| 10305 | IP conveyance error During bootup (2) | During bootup, the IP search detects that there is an IP in the machine that is difficult to convey. The backup memory has a record indicating the absence of an IP in the machine. IP conveyance is not performed before power-OFF. It is presumed that the backup memory has been cleared. | MT-54 |
| 10306 | IP positioning error at side-positioning conveyor During bootup | During bootup, the MB1 and MC3 are driven (clockwise) to perform side-positioning operation for remaining IP processing, but the SC3 does not transition to CLOSE within the specified period of time. | MT-56 |
| 10307 | Length-measurement conveyance error During bootup | During bootup, the MZ1, MC3, and MB1 are driven (counterclockwise) to measure the IP size for remaining IP processing, but the SC3 does not transition to CLOSE within the specified period of time. Alternatively, it transitions to CLOSE but not to OPEN. | MT-56 |
| 10318 | Suction cup HP operation error | During bootup or routine processing, because error (14315, 14316, 14317) is detected, retries (four times or more) are performed, but error (fatal error) results. | MT-57 |
| 10334 | Side-positioning HP operation error | During bootup or routine processing, because error (14331, 14332, 14333) is detected, retries (four times or more) are performed, but error (fatal error) results. | MT-58 |
| 10338 | Side-positioning grip HP operation error | During bootup or routine processing, because error (14335, 14336, 14337) is detected, retries (four times or more) are performed, but error (fatal error) results. | MT-59 |
| 10340 | IP stopper protrusion error | During bootup, the SolZ1 is turned ON to protrude the stopper, but the SZ4 does not transition to OPEN within the specified period of time. Retries (six times or more) are performed, but error results. | MT-60 |
| 10341 | IP stopper retreat error | During bootup and shutdown processing, the SolZ1 is turned OFF to retreat the stopper, but the SZ4 does not transition to CLOSE within the specified period of time. Retries (six times or more) are performed, but error results. | MT-60 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10346 | Driving shaft grip error | During bootup, the MZ2 is driven to grip the driving shaft, but the SZ2 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results. | MT-62 |
| 10347 | Driven shaft grip error | During bootup, the MZ2 is driven to grip the driven shaft, but the SZ3 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results. | MT-64 |
| 10348 | Both grip release error | During bootup, the MZ2 is driven to release both grips, but the SZ2 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results. | MT-62 |
| 10349 | Driven shaft grip release error | During bootup, the MZ2 is driven to release the driven shaft grip, but the SZ3 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results. | MT-64 |
| 10353 | Driving shaft correction grip error | During bootup, the MZ2 is driven to correct the speed, but the SZ2 does not transition to OPEN within the specified period of time. | MT-62 |
| 10354 | Initialization grip movement (1) error | During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results | MT-64 |
| 10355 | Initialization grip movement (2) error | During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to CLOSE or the SZ3 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results. | MT-62 |
| 10356 | Ejection grip error | During bootup, the MZ2 is driven to perform ejection grip, but the SZ3 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results. | MT-64 |
| 10357 | No-load running error | During bootup, the MZ2 is driven to perform no-load running, but the SZ3 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results. | MT-64 |
| 10360 | After-erasure conveyance error | During routine processing, the SB1 cannot detect the IP leading edge for after-erasure conveyance (the MB1 is driven counterclockwise). The MB1 is driven (counterclockwise) to perform load conveyance, but the SB1 does not transition to CLOSE within the specified period of time (20 sec). | MT-76 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10361 | After-recovery-erasure conveyance error | During error handling, the SB1 cannot detect the IP leading edge. The MB1, MC1, and MZ1 are driven (counterclockwise) for load conveyance, but the SB1 does not transition to CLOSE within the specified period of time (20 sec). (The SB1 is in OPEN status.) | MT-76 |
| 10370 | Load positioning error | During routine processing, the MB1 is driven (counterclockwise) to perform load conveyance, but the SB1 does not transition to OPEN within the specified period of time. | MT-66 |
| 10371 | Recovery load positioning error | During error handling, the MB1, MC1, and MZ1 are driven (counterclockwise) for load conveyance after the IP leading edge is detected by the SB1, but the SB1 does not transition to OPEN within the specified period of time (20 sec). | MT-66 |
| 10390 | Dust removal operation error (1) | During bootup or U-Utility dust removal operation, the MZ3 is driven (clockwise), but the SZ5 does not transition to CLOSE within the specified period of time (30 sec). | MT-68 |
| 10391 | Dust removal mechanism lock (1) | During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but a mechanism lock results. Subsequently, the MZ3 is driven (clockwise), but the SZ5 does not transition from CLOSE to OPEN within the specified period of time (30 sec). | MT-68 |
| 10392 | Dust removal mechanism lock (2) | During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but a mechanism lock results. Subsequently, the MZ3 is driven (clockwise), but the SZ3 does not transition from OPEN to CLOSE within the specified period of time (30 sec). | MT-68 |
| 10393 | Dust removal operation error (4) | During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to perform home positioning, but the SZ5 does not transition from CLOSE to OPEN within the specified period of time (30 sec). | MT-68 |
| 10394 | Dust removal CCW drive error | During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise), but two or more retries occur. However, driving in the clockwise direction is normal. | MT-70 |
| 10400 | Network board error | During bootup and routine processing, error is detected on the Ethernet section on the CPU12A board of the RU. | 6.1 |
| 10700 | SDRAM test error | During bootup, when the SDRAM, or the main memory of the CPU12A board, is tested, error is detected. The warning is recorded and retries (up to two times) are performed, but error is detected again. | 8 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 10799 | CPU bus error | During bootup and routine processing, an unthinkable state is detected by the main CPU on the CPU12A board. | 8 |
| 10900 | Conveyance-related driver error | During bootup and routine processing, the driver used for conveyance-related software processing between the CPU12A and SNS12A boards causes ERROR to be returned as a return value. | 6.2 |
| 10901 | Conveyance-related common function error | During bootup and routine processing, ERROR is returned as a return value for the common function used for conveyance-related software processing between the CPU12A and SNS12A boards. | 6.2 |
| 10902 | Conveyance-related standard function error | During bootup and routine processing, ERROR is returned as a return value for the standard function used for conveyance-related software processing between the CPU12A and SNS12A boards. | 6.2 |
| 10903 | Conveyance-related device OPEN error | During bootup and routine processing, ERROR is returned as a return value for device OPEN used for conveyance-related software processing between the CPU12A and SNS12A boards. | 6.2 |
| 10921 | Watchdog error | During bootup and routine processing, the watchdog timer on the CPU12A board times out. | 8 |
| 10991 | Device open error | During bootup and routine processing, the device open error on the CPU12A board occurs. | 8 |
| 11024 | Machine application update | Writing of the RU APPL software from the FTP server of the CL to the CPU12A board flash ROM of the RU is completed normally. | - |
| 11025 | Machine configuration update | Writing of the RU configuration data from the FTP server of the CL to the CPU12A board flash ROM of the RU is completed normally. | - |
| 11094 | Socket error | During bootup, error related to socket communication is detected. Socket communication cannot be performed normally due to software bugs. | - |
| 11208 | Laser drive current error | During bootup and routine processing, the laser drive current value (LDIF) is more than 1.4 times the factory default value. | MT-106 |
| 11272 | Insufficient laser light intensity | During bootup, laser OK signal (LD1OKH, LD1OKL) error is detected. | MT-106 |
| 11273 | Laser life warning | During bootup and routine processing, the laser drive current value (LDIF) is more than 1.4 times the factory default value. | MT-106 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 11303 | IP initialization search error | During bootup, the IP search determines that there is no IP. However, the conveyance backup memory has a record indicating the presence of an IP in the machine for routine processing. | MT-54 |
| 11309 | Cassette setting error (3) | Because the cassette is inserted into the RU while the CL is in "Unacceptable (cassette cannot be accepted)" condition, the cassette is fed once and ejected without reading; as a result, a message notifying that reading has not be done is displayed on the CL. | - |
| 11310 | Cassette setting error (1) | During routine processing, the SA2 transitions to CLOSE, and after the SolA1 is turned OFF, the SA3 does not transition to OPEN. Retries (six times or more) are performed, but error results. | MT-71 |
| 11311 | Cassette setting error (2) | During routine processing, the SA2 transitions to CLOSE, and after the SolA1 is turned ON, the cassette is moved, but the SA2 does not transition to CLOSE within the specified period of time. However, the SA1 is CLOSE. | MT-71 |
| 11312 | Cassette hold release error | During routine processing, the SolA1 is turned ON to release the cassette hold, but the SA3 does not transition to CLOSE within the specified period of time. Retries (six times or more) are performed, but error results. | MT-72 |
| 11319 | Feed IP suction error | During routine processing, the MA1 is driven (counterclockwise) and the PA1 is turned ON to perform IP feed leak, but the SA5 does not transition to CLOSE within the specified period of time. Retries (four times or more) are performed, but error results. | MT-74 |
| 11320 | Feed IP drop | During bootup and routine processing, the MA1 and MB1 are driven (clockwise) to feed the IP from the cassette, but the SA5 transitions to OPEN at the time when the IP is griped by the rollers. Retries (two times or more) are performed, but error results. | MT-74 |
| 11321 | Feed IP grip error | During bootup and routine processing, the MB1 is driven (clockwise) to perform IP feed leak and conveyance, but the SB1 does not transition to CLOSE within the specified period of time. Retries (four times or more) are performed, but error results. | MT-74 |
| 11322 | Feed conveyance error | During routine processing, the MB1 and MC3 are driven (clockwise) to perform IP high-speed conveyance, but the SC3 transitions to OPEN. Retries (four times or more) are performed, but error results. | MT-74 |
| 11323 | Length-measurement conveyance error | During routine processing, the MB1 and MC3 are driven (clockwise) to determine the IP size, but the SB1 transitions to OPEN. Retries (four times or more) are performed, but error results. | MT-76 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 11325 | Load leak error | During routine processing, the SVA1 is turned ON and the PA1 is turned OFF to leak the IP after loading it into the cassette, but the SA5 does not transition to OPEN. | MT-77 |
| 11340 | IP stopper protrusion error | During routine processing, the SOLZ1 is turned ON to protrude the IP stopper after IP feed leak, but the SZ4 transitions to CLOSE. SZ4 checks are retried (two times or more), but error results. | MT-60 |
| 11341 | IP stopper retreat error | During routine processing and U-Utility dust removal operation, the SOLZ1 is turned OFF to retreat the IP stopper, but the SZ4 transitions to OPEN. SZ4 checks are retried (six times or more), but error results. | MT-60 |
| 11342 | Reading IP leading-edge detection error | During routine processing, the MZ1 is driven (clockwise) to perform read processing, but the SZ1 transitions to OPEN. Subsequently, the laser is turned OFF, and when IP conveyance is performed to isolate the error, the SC3 transitions to OPEN. | MT-78 |
| 11343 | Subscanning conveyance error (1) | During routine processing, the MZ1 is driven (clockwise) to perform read processing, but the SZ1 transitions to OPEN. Subsequently, the laser is turned OFF, and when IP conveyance is performed to isolate the error, the SC3 transitions to CLOSE. | MT-78 |
| 11344 | Subscanning conveyance error (2) | During routine processing, the SC3 does not transition to OPEN within the specified period of time before the end-of-image interrupt after reading is initiated. | MT-78 |
| 11350 | End-of-image timeout | During routine processing, the end-of-image interrupt from the scanner board is not processed within the specified period of time after reading is initiated. | MT-79 |
| 11362 | After-reading conveyance error | During routine processing, the MZ1, MC3, and MB1 are driven (counterclockwise) to convey the IP to the erasure unit after reading is completed, but the SC4 does not transition to CLOSE within the specified period of time. | MT-80 |
| 11363 | Erasure conveyance error | During routine processing, the MC3 and MB1 are driven (counterclockwise) to perform erasure conveyance of the IP after reading, but the SC4 does not transition to OPEN. | MT-81 |
| 11366 | Overexposed IP detected | During routine processing, an overexposed IP is detected. | - |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 11371 | Load IP drop | During bootup and routine processing, the MB1 is driven (counterclockwise) to reload the IP due to the load IP drop retry (14373) or load IP suction failure retry (14372), but the SB1 does not transition to OPEN within the specified period of time. | MT-82 |
| 11372 | Load IP suction error | During routine processing, the PA is turned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN within the specified period of time. Retries (four times or more) are performed, but error results. | MT-82 |
| 11373 | Load IP drop | During routine processing, the PA1 is turned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN at the time when the IP is released. Retries (four times or more) are performed, but error results. | MT-82 |
| 11380 | Maximum empty cassette setting | During bootup, an attempt is made to eject (load) the remaining IP into the cassette, but the cassette has not been set. | MT-83 |
| 11387 | Recovery IP processing | During bootup, the remaining IP that has not been erased is detected. | MT-84 |
| 11400 | Unread IP ejection (1) | During routine processing, the IP is ejected, without being read, to the cassette for some reason on the CL side. | - |
| 11401 | Unread IP ejection (2) | During routine processing, the IP is ejected, without being read, to the cassette for some reason on the RU side. | - |
| 11402 | Retransmission retry failure cassette ejection | During routine processing, an attempt is made to retransmit the unsent image data from the RU to the CL after communication down processing with the CL, the CL rejects it, so that the image data is lost, and the cassette is ejected. | 6.1 |
| 11731 | Thermistor failure detection (during erasure initialization) | During bootup, it is detected that temperature control of the erasure unit is disabled due to temperature thermistor (THB1) error. | 6.4 |
| 11732 | Thermistor status error detection (during erasure initialization) | During bootup, the temperature thermistor (THB1) detects an abnormal range. Temperature control of the erasure unit is disabled. | 6.4 |
| 11737 | Lamp unlit detection (during erasure initialization) | During bootup, the erasure lamps are turned on to check their lighting, but a single center lamp (socket L2) of the three erasure lamps is unlit. Or, two or more erasure lamps are unlit. | 6.4 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 11751 | Thermistor failure detection (during IP processing) | During routine processing, error for the temperature thermistor (THB1) is detected. | 6.4 |
| 11752 | Erasure unit temperature status inconsistency (during IP processing) | During routine processing, error for the temperature states (LED: D15, D11, D10, D13) in the erasure unit is detected. Temperature control of the erasure unit is disabled. | 6.4 |
| 11757 | Lamp unlit detection (during erasure idle temperature control) | During machine idle state, in order to perform erasure temperature control, the erasure lamps are turned on to check their lighting, but a single center lamp (socket L2) of the three erasure lamps is unlit. Or, two or more erasure lamps are unlit. | 6.4 |
| 11767 | Lamp unlit detection (during IP erasure lighting) | During IP erasure, the erasure lamps are turned on to check their lighting, but a single center lamp (socket L2) of the three erasure lamps is unlit. Or, two or more erasure lamps are unlit. | 6.4 |
| 11781 | Thermistor failure detection (during idling) | During idle state after machine bootup, error for the temperature thermistor (THB1) is detected. | 6.4 |
| 11782 | Erasure unit temperature status inconsistency (during idling) | During bootup, error for the temperature states (LED: D15, D11, D10, D13) in the erasure unit is detected. Temperature control of the erasure unit is disabled. | 6.4 |
| 11890 | Power supply C31 error | During bootup and routine processing, the blow of the fuse C31 on the MTH12A board is detected. | 10.5 |
| 12026 | Image transfer timeout | During routine processing, the image data is not sent from the sub-CPU of the CPU12A board to the CL. (Timeout error) | 6.1 |
| 12028 | Backup SRAM initialization warning | Initialization of the backup memory on the CPU12A board is executed.<br>• The machine that has been powered OFF for several months is booted up.<br>• The machine is booted up after the backup memory is cleared in M-Utility.<br>• The machine is booted up after erasure mode switching and resetting are performed and the backup memory is cleared. | - |
| 12033 | Barcode data reading error | Because an attempt to read the barcode data on the CPU12A board, a retry is performed. | 8 |
| 12035 | Preheat warning during erasure lamp lighting | During bootup and routine processing, because the erasure lamps are turned on without preheating them, the erasure lamps are not lit. | 6.4 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12036 | Scanner communication timeout | During bootup and routine processing, a timeout occurs for communication between the main CPU (CPU12A board) and scanner H8CPU (SCN12A board). | 6.3 |
| 12037 | Scanner communication checksum error | During bootup and routine processing, a checksum error occurs for communication between the main CPU (CPU12A board) and scanner H8CPU (SCN12A board). | 6.3 |
| 12040 | Failure to register reset switch interrupt | During bootup and routine processing, because an attempt to register the reset switch interrupt on the CPU12A board fails, the reset switch does not function. | 8 |
| 12062 | HOST alternative function warning | Service job log<br>• The machine is booted up after erasure mode switching and resetting are performed and the backup memory is cleared.<br>• The image output function is activated by using the M-Utility function on the RU side. | - |
| 12063 | Image processing CPU error during operation | During routine processing, because the data sent from the sub-CPU of the CPU12A board has an insufficient or excess number of pixels, the software performs processing to supplement or cut the insufficient or excess number of pixels in the line direction. | 8 |
| 12070 | Backup SRAM write error | During bootup and routine processing, an attempt to write to the backup memory (SRAM) fails. Or, a write to the backup SRAM is performed during backup memory test. | 8 |
| 12071 | Flash ROM write error | An attempt to write the flash ROM on the CPU12A board fails. | 8 |
| 12090 | Software logic warning | During bootup and routine processing, the software executes an abnormal case. Although the process may be resumed as is, its error log is generated. | - |
| 12092 | FTP server access error | During bootup and routine processing, the FTP server cannot be accessed for communication from the RU to the CL. Or, the FTP server may be accessed, but a connection cannot be established. | 6.1 |
| 12093 | FTP server file acquisition error | During bootup and routine processing, the FTP server cannot be accessed for communication from the RU to the CL. Or, the FTP server may be accessed, but a file cannot be obtained. | 6.1 |
| 12094 | ACK timeout | During bootup and routine processing, a FTP server connection timeout error occurs for communication from the RU to the CL. | 6.1 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12101 | Image processing CPU data output shortage | • A warning log indicating that dummy data was sent from the CPU12A board due to image data shortage.<br>• During routine processing, the image data sent from the SCN12A board to the CPU12A board is insufficient. | 6.2 |
| 12148 | Image frame clock timeout | A timeout of the frame clock lock (information indicative of the beginning of the image data) from the SCN12A board is detected by the sub-CPU. (30 seconds) | 6.3 |
| 12149 | Image processing pixel clock excess error | An error is detected for the pixel clock from the sub-CPU to the SCN12A board.<br>• The pixel clock that is larger than the parameter value is detected.<br>• The pixel clock, which is part of image data, denotes the number of pixels per one line of the image data. | 6.3 |
| 12150 | Image processing pixel clock shortage error | During routine processing, when the image data from the SCN12A board is processed, an insufficient number of pixels for a certain line is detected by the sub-CPU. | 6.3 |
| 12151 | Image processing line clock excess error | During routine processing, when the image data from the SCN12A board is processed, an excess number of lines is detected. | 6.3 |
| 12152 | Image processing line clock shortage error | During routine processing, when the image data from the SCN12A board is processed, an insufficient number of lines is detected, or even when five seconds have passed after the trailing edge of a certain line clock, the trailing edge of its subsequent line clock cannot be detected. | 6.3 |
| 12153 | Image processing frame clock error | During routine processing, when an image processing command is accepted from the SCN12A board to the sub-CPU, the sub-CPU have already received the frame clock from the SCN. | 6.3 |
| 12154 | Image processing overrun error | During routine processing, the main CPU loses some of the image data from the sub-CPU. | 8 |
| 12164 | FIFO data count shortage error | During routine processing, the sub-CPU completes its processing normally, but the number of pixels received by the main CPU via the FIFO is insufficient. | 8 |
| 12165 | FIFO data count excess error | During routine processing, the sub-CPU completes its processing normally, but the number of pixels received by the main CPU via FIFO is excessive. | 8 |
| 12201 | Start-point detection error | During bootup and routine processing, error for the start-point detection signal (SSH, SSL) is detected. | MT-102 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12202 | Leading-edge detection error | During bootup and routine processing, only error for the leading-edge detection signal (SED1, SED2L) is detected. | MT-108 |
| 12203 | SCN sync signal error | For self-diagnostics prior to reading during bootup, an SCN board diagnostic error (no main-scan sync signal is generated) associated with polygon error occurs. | - |
| 12204 | Polygon index signal error | For self-diagnostics prior to reading during bootup, an SCN board diagnostic error (no polygon index signal is generated) associated with polygon error occurs. | - |
| 12211 | PMT analog power supply error | During bootup and routine processing, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected. | MT-110 |
| 12212 | Laser light intensity error | During bootup and routine processing, only error for the laser OK signal (LD1OKH, LD1OKL) is detected. | MT-106 |
| 12213 | Polygon lock error | During bootup and routine processing, only error for the polygon lock signal (POKL, PONL) is detected. | MT-112 |
| 12214 | Polygon rotation error | During bootup and routine processing, error is detected only for the polygon rotation detection function on the SCN12A board. | 14.2 |
| 12215 | PLL function error | During bootup and routine processing, error is detected only for the PLL function on the SCN12A board. | 14.2 |
| 12216 | Start-point interval error | During bootup and routine processing, error is detected only for the start-point interval function on the SCN12A board. | 14.2<br>14.3 |
| 12217 | High-voltage power supply error | During bootup and routine processing, error is detected only for the high-voltage power supply signal (HVOKH/L). | MT-110 |
| 12218 | High-voltage command value error | During bootup and routine processing, error is detected only for the high-voltage command value diagnostics signal on the SCN12A board. | 8 |
| 12225 | Reading status error | During bootup and routine processing, error is detected only for the VSYNC signal on the SCN12A board. | 8 |
| 12226 | Operation line status error | During bootup and routine processing, error is detected only for the SEDTM/FCLKTM signal on the SCN12A board. | 8 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12241 | Scanner control board error (1) | During routine processing, error is detected for the PLL function, polygon rotation function, start-point interval function on the SCN12A board. | 14.2<br>14.3 |
| 12242 | Scanner control board error (2) | During routine processing, because the PMT high-voltage value is not set correctly on the SCN12A board, error is detected for the high-voltage command diagnostics. | 14.5 |
| 12243 | Scanner control board error (3) | During bootup self-diagnostics, error is detected for the start-point mask signal generated from the SCN12A board and the index signal (PINDXL) from the polygonal mirror (POL). | 14.3 |
| 12251 | Photomultiplier control board error (1) | During routine processing, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected (detail code: 008200). Note that if the HV is OFF, the detail code is 008000. | MT-110 |
| 12252 | Photomultiplier control board error (2) | During routine processing, only error for the high-voltage power supply signal (HVOKH, HVOKL) is detected. | MT-110 |
| 12255 | Leading-edge detection error | During bootup, only error for the leading-edge detection signal (SED1, SED2L) is detected. | MT-108 |
| 12256 | Leading-edge detection timing error | During routine processing, IP conveyance overrun occurs due to mechanical error or SCN12A board control error, and only error for the SEDTM and FCLKTM signals on the SCN12A board is detected. | MT-114 |
| 12262 | Polygon rotation error (2) | • During routine processing, error for the signals (PONL, POKL, PINDXL) from the polygonal mirror (POL) and the start-point interval function on the SCN12A board is detected (detail code: 003400).<br>• During routine processing, error for the polygon lock signal (PONL, POKL) and error for the start-point interval function and polygon rotation detection function on the SCN12A board are detected (detail code: 003400). | MT-112 |
| 12263 | Polygon rotation error (3) | During routine processing, only error for the lock signal (POKL, PONL) from the polygonal mirror (POL) is detected (detail code: 002000). If error for the SEDTM or FCLKTM signal on the SCN12A board is detected, the detail code is 002003. | MT-112 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12264 | Polygonal rotation error (4) | During routine processing, error for the signals (PONL, POKL, PINDXL) from the polygonal mirror and the SEDTM signal on the SCN12A board is detected (detail code: 001002). Alternatively, error for the index signal (PINDXL) from the polygonal mirror and the SEDTM and FCLKTM signals on the SCN12A board is detected (detail code: 0010030). Alternatively, error for the signals (POKL, PINDXL) from the polygonal mirror and the SEDTM signal on the SCN12A board is detected (error code: 001002). | MT-112 |
| 12272 | Insufficient laser light intensity (1) | During routine processing, the laser light intensity is less than 50%, and the laser light intensity error signal (LD1OKL, LD1OKH) is detected (detail code: 004000). Alternatively, the laser light intensity error signal (LD1OKL, LD1OKH) and laser drive current value (LDIF) error are detected (detail code: 014000). | MT-106 |
| 12273 | Laser life warning | During bootup and routine processing, the laser drive current value (LDIF) is more than 1.4 times the factory default value. | MT-106 |
| 12281 | Start-point detection error (1) | During routine processing, the disabled state of the start-point detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801C03). Alternatively, the disabled state of the start-point detection (SYN) function, and error for the PLL function on the SCN12A board are detected (detail code: 800C03). Alternatively, during routine processing, the disabled state of the start-point detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801401). | MT-102 |
| 12282 | Start-point detection error (2) | During bootup and routine processing, only error for the start-point interval function on the SCN12A board is detected (detail code: 000400). Alternatively, error for the start-point interval function and polygon rotation detection function on the SCN12A board is detected (detail code: 001400). | 14.3 |
| 12291 | Reading sequence error | During routine processing, error for the VSYNC signal on the SCN12A board is detected after IP reading is completed (detail code: 000002). | 8 |
| 12292 | Reading sequence error during routine (2) | Reading is completed by any interrupt other than the leading-edge detection interrupt or end-of-screen interrupt. At the same time, an insufficient number of output lines and a too-early start of reading are detected. | - |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12299 | Error for scanner, etc. | For self-diagnostics prior to reading during routine processing, a combination of errors that should not have logically occurred were generated. | - |
| 12301 | Sensor error | During routine processing, the sensor is turned OFF after the timeout of the mechanical operation is detected, but the sensor does not transition to CLOSE. | MT-53 |
| 12302 | IP location information logical failure | During bootup, the result of IP search indicates the presence of an IP, but the backup memory information indicates that there is no IP in the machine. Because there is no result of clearing the CMOS, it is logically inconsistent. | MT-52 |
| 12304 | IP movement error at scanner unit During bootup | During bootup, the MB1, MC3, and MZ1 are driven (clockwise) for IP search, but the SC3 does not transition to OPEN within the specified period of time. | MT-54 |
| 12305 | IP movement error at erasure conveyor/side-positioning conveyor During bootup | During bootup, the MB1 and MC3 are driven (clockwise) for IP search, but the SC3 does not transition to CLOSE within the specified period of time. | MT-54 |
| 12313 | Cassette not detected | During routine processing, while the SolA1 is tuned ON to hold the cassette, the cassette is pulled all the way out of the shutter, and SA1 transitions to OPEN. | MT-85 |
| 12318 | Suction cup return error | During bootup and routine processing, SA4 does not transition to CLOSE for suction cup HP check. | MT-57 |
| 12324 | Barcode reading error | During routine processing, an attempt to read the barcode for feed conveyance fails. Retries (four times or more) are performed, but error results. | MT-87 |
| 12325 | Feed leak error | During bootup and routine processing, the SVA1 is turned ON and the PA1 is turned OFF to perform IP feed leak, but the SA5 does not transition to OPEN. | MT-77 |
| 12326 | HP return error during ejection | During routine processing, the MA1 is driven (counterclockwise) to perform suction cup home positioning after the cassette is ejected, but the SA4 does not transition to CLOSE. | MT-57 |
| 12334 | Side-positioning operation error | During routine processing, the MC1 is driven (clockwise) to perform side-positioning home positioning, but the SC1 does not transition to CLOSE. | MT-58 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12338 | Side-positioning grip operation error | During routine processing, the MC2 is driven (counterclockwise) to perform side-positioning grip home positioning, but the SC2 does not transition to CLOSE. | MT-59 |
| 12345 | FFM drive W.F. disorder | During routine processing, wow-flutter error (irregular revolutions) of the FFM motor is detected. | MT-86 |
| 12346 | Driving shaft grip error | During routine processing, the MZ2 is driven to perform driving-shaft slow grip after driven-shaft grip is completed, but the SZ2 does not transition from CLOSE to OPEN. | MT-62 |
| 12347 | Driven shaft grip error | During routine processing, the MZ2 is driven to grip the driven shaft after side-positioning is completed, but the SZ3 does not transition to CLOSE. Retries (two times or more) are performed, but error results. | MT-64 |
| 12348 | Both grip release error | During bootup and routine processing, the MZ2 is driven to release both grips, but the SZ2 does not transition to CLOSE. Retries (two times or more) are performed, but error results. | MT-62 |
| 12349 | Driven shaft grip release error | During routine processing, the MZ2 is driven to release the driven shaft slow grip after reading, but the SZ3 does not transition to OPEN. | MT-64 |
| 12352 | Driving shaft grip error stop | During bootup and routine processing, the grip time for the driving shaft grip deviates by ±3% relative to its specified value, but the SZ2 is CLOSE. | MT-64 |
| 12353 | Driving shaft correction grip error | During routine processing, the MZ2 is driven to perform driving-shaft correction grip, but the SZ2 does not transition to OPEN. | MT-62 |
| 12354 | Driving shaft grip disorder | During routine processing, the MZ2 is driven to perform driving-shaft slow grip and the SZ2 transitions from CLOSE to OPEN, but the grip time deviates by ±3% relative to its specified value. | MT-64 |
| 12355 | Driving shaft grip malfunction | During bootup and routine processing, because the grip time for the driving shaft grip deviates by ±6% relative to its specified value, speed correction processing and operation check are performed. | MT-64 |
| 12356 | Ejection grip error | During routine processing, the MZ2 is driven to perform ejection grip, but the SZ3 does not transition to CLOSE. Retries (two times or more) are performed, but error results. | MT-64 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12357 | No-load running error | During bootup and routine processing, the MZ2 is driven to perform no-load running, but the SZ3 does not transition to OPEN. Retries (two times or more) are performed, but error results. | MT-64 |
| 12360 | After-erasure conveyance error | During routine processing, the SB1 cannot detect the IP leading edge for after-erasure conveyance (the MB1 is driven counterclockwise). To perform load conveyance, the MB1 is driven (counterclockwise), but the SB1 does not transition to CLOSE within the specified period of time (20 sec). It is logged, with the operation continued. | - |
| 12388 | IP with improper generation or type detected | During routine processing, the IP of the type that is not set in the configuration is detected from the barcode data. | - |
| 12390 | Dust removal operation error (1) | During U-Utility dust removal operation, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE within the specified time (30 sec). | MT-68 |
| 12391 | Dust removal operation error (2) | During U-Utility dust removal operation, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE within the specified time (30 sec). | MT-68 |
| 12392 | Dust removal operation error (3) | During U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE within the specified period of time (30 sec). | MT-68 |
| 12393 | Dust removal operation error (4) | During U-Utility dust removal operation, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE within the specified time (30 sec). | MT-68 |
| 12394 | Dust removal operation error (5) | During shutdown processing, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE. | MT-68 |
| 12395 | Dust removal operation in low speed | During bootup, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to OPEN within the specified time (30 sec) in the low-speed operation mode (the actuator, from its large hole to smaller hole). | MT-68 |
| 12401 | Software initialization timeout | The initialization of the RU software is not completed within the specified period of time. | 8 |
| 12402 | User password setup failure | Password setup that is defined in the configuration fails. | 8 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12403 | FTP server registration failure | The IP address of the FTP server cannot be registered in the table that manages the OS. | 6.1 |
| 12404 | Failure to create device for FTP server access | An attempt to create a device for accessing the FTP server fails. Software automatic version update, log uploading, etc. cannot be done. | 6.1 |
| 12406 | Barcode data error | The data that is scanned by the barcode is inconsistent with the format (A********C: * denotes a numeral). | 8 |
| 12407 | Status check error after SCPU command writing | An image processing command is issued to the image processing unit (sub CPU), but the status of the sub CPU does not become IDLE or BUSY. | - |
| 12408 | Image processing CPU status error | After a command is sent, the status of the image processing CPU is not busy. Image reading is not performed, and the IP is ejected. | 8 |
| 12409 | IP size error | An IP of out-of-range size was set by the conveyance subsystem. | - |
| 12410 | Configuration checksum error | During bootup, the configuration file in the flash ROM on the CPU12A board causes a checksum error. Download the configuration file from the FTP server. | - |
| 12502 | Connection monitoring Com-Terminate detection | The communication disabled state between the CL and RU is detected. The communication connection is disconnected once, and enters the connection wait state. | 6.1 |
| 12700 | CPU board initial diagnostics test error | The machine is booted up with the SW S5 setting on the CPU12A board in the ON state. | - |
| 12701 | Bus error detection function error | During bootup and routine processing, error is found for the bus error detection. | 8 |
| 12702 | SCN-H8 microprocessor interrupt test error | During bootup and routine processing, an interrupt is sent from the main CPU of the CPU12A board to the H8CPU of the SCN12A board, but the interrupt is not completed normally. | 6.3 |
| 12703 | Sensor board interrupt test error | During bootup and routine processing, an interrupt is sent from the main CPU of the CPU12A board to the SNS12A board, but the interrupt is not completed normally. | 6.2 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12730 | Inverter cooling fan operation error (during erasure initialization) | During bootup, error for the FAN4 (inverter board cooling fan) is detected, but it is activated as usual. | 6.4 |
| 12733 | High-temperature error detection (during erasure initialization) | During bootup, the temperature thermistor (THB1) detects high-temperature error. | 6.4 |
| 12735 | Erasure cooling fan diagnostics error (during erasure initialization) | During bootup, error for the FAN3 (erasure unit lamp house cooling fan) is detected, but only a warning is recorded, and fan control continues as usual. | 6.4 |
| 12736 | Single lamp unlit detection (during erasure initialization) | During bootup, because one of the three lamps is unlit, the machine is booted up in the mode where the erasure time is extended. | 6.4 |
| 12743 | Erasure unit high-temperature error cancel | During bootup and routine processing, 12733 or 12753 occurs and the temperature of the erasure unit lamp reaches an abnormal level, so that the no-erasure mode is temporarily entered.<br>Subsequently, because the erasure lamp temperature drops below the specified level (erasure-enabled temperature), it returns to the normal mode. | 6.4 |
| 12753 | Erasure unit high-temperature error | During routine processing and idling, the temperature thermistor (THB1) detects high-temperature error. | 6.4 |
| 12756 | Single lamp unlit detection (during erasure idle temperature control) | During idling, when the erasure lamps are turned on for erasure temperature control, a single lamp that is normally lit does not turn on, so that it enters the erasure time extension mode. | 6.4 |
| 12766 | Single lamp unlit detection (during IP erasure lighting) | During bootup and routine processing, when the erasure lamps are turned on during IP erasure, a single lamp is unlit, so that it enters the erasure time extension mode. | 6.4 |
| 12799 | Self-reset procedure error | An interrupt is received such that the main CPU has accessed the self-reset register that is usually accessed during shutdown processing, using improper procedure. | 8 |
| 12800 | Erasure unit safety thermostat TSWB1 operation | During bootup and routine processing, because the erasure unit lamp housing reaches an abnormally high temperature, the safety thermostat TSWB1 is activated. | 6.4 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12810 | Power supply A error | During bootup and routine processing, the blow of the fuses A21 on the MTH12A board, A22 on the SCN12A board, and A32, A33, A34, and A35 on the SNS12A board is detected. | 10.1-10.6 |
| 12811 | Power supply A21 error | During bootup and routine processing, the blow of the fuses A21 on the MTH12A board and A22 on the SCN12A board is detected. | 10.4 |
| 12812 | Power supply A22 error | During bootup and routine processing, the blow of the fuse A22 on the SCN12A board is detected. | 10.4 |
| 12813 | Power supply A32 error | During bootup and routine processing, the blow of the fuse A32 on the SNS12A board is detected. | 10.5 |
| 12814 | Power supply A33 error | During bootup and routine processing, the blow of the fuse A33 on the SNS12A board is detected. | 10.6 |
| 12815 | Power supply A34 error | During bootup and routine processing, the blow of the fuse A34 on the SNS12A board is detected. | 10.6 |
| 12816 | Power supply A35 error | During bootup and routine processing, the blow of the fuse A35 on the SNS12A board is detected. | 10.1 |
| 12817 | Power supply A3 error | During bootup and routine processing, the blow of the fuses A32, A33, A34, and A35 on the SNS12A board is detected. | 10.1-10.6 |
| 12818 | Power supply A series detection error | During bootup and routine processing, the blow of the fuse A21 on the MTH12A board is detected. | 10.4 |
| 12819 | Power supply A system error | During bootup and routine processing, it is detected that a combination of errors for software monitoring is other than a combination from 12810 to 12818. | 10.1-10.6 |
| 12820 | Power supply BC error | During bootup and routine processing, the voltage at point B of SLOT2 (+24V) on the power supply unit is not outputted, and the blow of the fuses B11, B21, C11, and C21 on the MTH12A board is detected. | 10.5<br>10.7 |
| 12821 | Power supply C error | During bootup and routine processing, the blow of the fuses C11 and C21 on the MTH12A board is detected. | 10.5 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12822 | Power supply B error | During bootup and routine processing, the voltage at point B of SLOT2 (+24V) on the power supply unit is not outputted, and the blow of the fuses B11 and B21 on the MTH12A board is detected. | 10.5<br>10.7 |
| 12823 | Power supply B11 error | During bootup and routine processing, the blow of the fuse B11 on the MTH12A board is detected. | 10.5 |
| 12824 | Power supply B21 error | During bootup and routine processing, the blow of the fuse B21 on the MTH12A board is detected. | 10.5 |
| 12825 | Power supply C11 error | During bootup and routine processing, the blow of the fuse C11 on the MTH12A board is detected. | 10.5 |
| 12826 | Power supply C21 error | During bootup and routine processing, the blow of the fuse C21 on the MTH12A board is detected. | 10.5 |
| 12827 | Power supply B series detection error | During bootup and routine processing, the voltage at point B of SLOT2 (+24V) on the power supply unit is not outputted. | 10.7 |
| 12828 | Power supply BC system error | During bootup and routine processing, the voltage at point B of SLOT2 (+24V) on the power supply unit is not outputted, or either of B11, B21, C11 or C21 on the MTH12A board is detected as defective, but a combination of errors for software monitoring is other than a combination from 12820 to 12827. | 10.5<br>107 |
| 12830 | Power supply DE error | During bootup and routine processing, the voltage at point D of SLOT3 (+24V) on the power supply unit is not outputted, and the blow of the fuses D11, D21, D31, D41, E11, E21, E31, and E41 on the DRV12A board is detected. | 10.2<br>10.3<br>10.6<br>10.7 |
| 12831 | Power supply D error | During bootup and routine processing, the voltage at point D of SLOT3 (+24V) on the power supply unit is not outputted, and the blow of the fuses D11, D21, D31, and D41 on the DRV12A board is detected. | 10.2<br>10.3<br>10.6<br>10.7 |
| 12832 | Power supply E error | During bootup and routine processing, the blow of the fuses E11, E21, E31, and E41 on the DRV12A board is detected. | 10.2<br>10.3<br>10.6 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12833 | Power supply D11 error | During bootup and routine processing, the blow of the fuse D11 on the DRV12A board is detected. | 10.2 |
| 12834 | Power supply D21 error | During bootup and routine processing, the blow of the fuse D21 on the DRV12A board is detected. | 10.3 |
| 12835 | Power supply D31 error | During bootup and routine processing, the blow of the fuse D31 on the DRV12A board is detected. | 10.3 |
| 12836 | Power supply D41 error | During bootup and routine processing, the blow of the fuse D41 on the DRV12A board is detected. | 10.6 |
| 12837 | Power supply E11 error | During bootup and routine processing, the blow of the fuse E11 on the DRV12A board is detected. | 10.2 |
| 12838 | Power supply E21 error | During bootup and routine processing, the blow of the fuse E21 on the DRV12A board is detected. | 10.2 |
| 12839 | Power supply E31 error | During bootup and routine processing, the blow of the fuse E31 on the DRV12A board is detected. | 10.3 |
| 12840 | Power supply E41 error | During bootup and routine processing, the blow of the fuse E41 on the DRV12A board is detected. | 10.3 |
| 12841 | Power supply D series detection error | During bootup and routine processing, the voltage at point D of SLOT3 (+24V) on the power supply unit is not outputted. | 10.7 |
| 12842 | Power supply DE system error | During bootup and routine processing, the broken line detection circuit D or either D11, D21, D31, D41, E11, E21, E31, or E41 is detected as abnormal, but a combination of errors for software monitoring is other than a combination from 12830 to 12841. | 10.2<br>10.3<br>10.6 |
| 12850 | Power supply H error | During bootup and routine processing, the voltage at point H of SLOT4 (+15V) on the power supply unit is not outputted, and the blow of the fuses H11 on the MTH12A and H12, H13, and H14 on the SCN12A is detected. | 10.4<br>10.7 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12851 | Power supply H11 error | During bootup and routine processing, the blow of the fuses H11 on the MTH12A board and H12, H13, and H14 on the SCN12A board is detected. | 10.4 |
| 12852 | Power supply H12 error | During bootup and routine processing, the blow of the fuse H12 on the SCN12A board is detected. | 10.4 |
| 12853 | Power supply H13 error | During bootup and routine processing, the blow of the fuse H13 on the SCN12A board is detected. | 10.4 |
| 12854 | Power supply H14 error | During bootup and routine processing, the blow of the fuse H14 on the SCN12A board is detected. | 10.4 |
| 12855 | Power supply H series detection error | During bootup and routine processing, the voltage at point H of SLOT4 (+15V) on the power supply unit is not outputted, or the blow of the fuse H11 on the MTH12A board is detected. | 10.4<br>10.7 |
| 12856 | Power supply H system error | During bootup and routine processing, it is detected that a combination of error for software monitoring is other than a combination from 12850 to 12855. | 10.4 |
| 12860 | Power supply J error | During bootup and routine processing, the voltage at point J of SLOT4 (-15V) on the power supply unit is not outputted, and the blow of the fuses J11 on the MTH12A and J12 on the SCN12A board is detected. | 10.4<br>10.7 |
| 12861 | Power supply J11 error | During bootup and routine processing, the blow of the fuses J11 on the MTH12A board and J12 on the SCN12A board is detected. | 10.4 |
| 12862 | Power supply J12 error | During bootup and routine processing, the blow of the fuse J12 on the SCN12A board is detected. | 10.4 |
| 12863 | Power supply J series detection error | During bootup and routine processing, the voltage at point J of SLOT4 (-15V) on the power supply unit is not outputted, or the blow of the fuse J11 on the MTH12A board is detected. | 10.4<br>10.7 |
| 12864 | Power supply J system error | During bootup and routine processing, it is detected that a combination of errors for software monitoring is other than a combination from 12860 to 12863. | 10.4 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12870 | Power supply K error | During bootup and routine processing, the voltage at point K of SLOT5 (+24V) on the power supply unit is not outputted, and the blow of the fuse K11 on the MTH12A board is detected. | 10.4<br>10.7 |
| 12871 | Power supply K11 error | During bootup and routine processing, the blow of the fuse K11 on the MTH12A board is detected. | 10.4 |
| 12872 | Power supply K series detection error | During bootup and routine processing, the voltage at point K of SLOT5 (+24V) on the power supply unit is not outputted. | 10.7 |
| 12880 | Power supply L error | During bootup and routine processing, the voltage at point L of SLOT5 (+15V) on the power supply unit is not outputted, and the error for the regulator L12 on the DRV12A board and the blow of the fuses L11, L21, and L31 on the DRV12A board are detected. | 10.3<br>10.7 |
| 12881 | Power supply L11 error | During bootup and routine processing, the error for the regulator L12 on the DRV12A board and the blow of the fuse L11 on the DRV12A board are detected. | 10.3 |
| 12882 | Power supply L12 error | During bootup and routine processing, the error for the regulator L12 on the DRV12A board is detected. | 10.3 |
| 12883 | Power supply L21 error | During bootup and routine processing, the blow of the fuses L21 and L31 on the DRV12A board is detected. | 10.3 |
| 12884 | Power supply L31 error | During bootup and routine processing, the blow of the fuse L31 on the DRV12A board is detected. | 10.3 |
| 12885 | Power supply L series detection error | During bootup and routine processing, the voltage at point L of SLOT5 (+15V) on the power supply unit is not outputted, or the blow of the fuse L11 or L21 on the DRV12A board is detected. | 10.3<br>10.7 |
| 12886 | Power supply L system error | During bootup and routine processing, it is detected that a combination of errors for software monitoring is other than a combination from 12880 to 12885. | 10.7 |
| 12891 | Power supply C series detection error | During bootup and routine processing, the voltage at point E of SLOT2 (+24V) on the power supply unit is not outputted, and the blow of the fuse C11, C21, or C31 on the MTH12A board is detected. | 10.7 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 12892 | Power supply D51 error | During bootup and routine processing, the blow of the fuse D51 on the DRV12A board is detected. | 10.2 |
| 12893 | Power supply E51 error | During bootup and routine processing, the blow of the fuse E51 on the DRV12A board is detected. | 10.2 |
| 12921 | Image processing CPU status error | During routine processing, a status error occurs between the main CPU and sub-CPU on the CPU12A board. | 8 |
| 12922 | FTP server detection error. | During bootup and routine processing, the FTP server cannot be detected for communication from the RU to the CL | 6.1 |
| 12923 | Application download error | An attempt to download an application from the FTP server of the CL to the CPU12A board of the RU fails. | 6.1 |
| 12960 | Message format error | A message that is not defined in the FRUP protocol is received for communication from the RU to the CL. | 6.1 |
| 12961 | ACK timeout | A timeout in connection with the FTP server is detected for communication from the RU to the CL. | 6.1 |
| 12970 | Backup memory write warning | During bootup and routine processing, an attempt to write to the backup memory of the CPU12A board fails. | 8 |
| 13010 | Utility command concurrent execution error | Bootup by use of the production tool and bootup in M-Utility from the CL are performed concurrently. | - |
| 13011 | Utility command parameter error | An entry that is out of range that may be inputted in M-Utility is made. | - |
| 13020 | File comparison error | The content of the file in the FTP server is different from the content of the file (IPL data, APPL data) in the flash ROM on the CPU12A board of the RU. | 6.1 |
| 13092 | Software logic warning | After power ON, the machine is in condition that is not set in software. | 8 |
| 13200 | High-voltage OFF during bootup | During bootup, the photomultiplier (PMT) high voltage is OFF. | 14.5 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 13201 | Start-point detection error | During M-Utility operation, only error for the start-point detection signal (SSH, SSL) is detected. | MT-102 |
| 13202 | Leading-edge detection error | During M-Utility operation, only error for the leading-edge detection signal (SED1L, SED2L) is detected. | MT-108 |
| 13203 | Start-point mask signal error | During M-Utility operation, only error for the start-point mask signal on the SCN12A board is detected. | 8 |
| 13204 | Polygon index signal error | During M-Utility operation, only error for the polygon index signal on the SCN12A board is detected. | 8 |
| 13208 | Laser drive current error | During M-Utility operation, the laser drive current value (LDIF) is more than 1.4 times the factory default value. | MT-106 |
| 13210 | Polygon lock timeout | During bootup and routine processing, the polygon OK signal is not detected within 6 seconds after turn-ON of the polygonal mirror. | MT-112 |
| 13211 | PMT analog power supply error | During M-Utility operation, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected. | MT-110 |
| 13212 | Laser light intensity error | During M-Utility operation, only error for the laser OK signal (LD1OKH, LD1OKL) is detected. | MT-106 |
| 13213 | Polygon lock error | During M-Utility operation, only error for the polygon signal (POKL, PONL) is detected. | - |
| 13214 | Polygon rotation error | During M-Utility operation, only error for the polygon rotation detection function on the SCN12A board is detected. | - |
| 13215 | PLL function error | During M-Utility operation, only error for the PLL function on the SCN12A board is detected. | - |
| 13216 | Start-point interval error | During M-Utility operation, only error for the start-point interval function on the SCN12A board is detected. | - |
| 13217 | High-voltage power supply error | During M-Utility operation, only error for the high-voltage power supply signal (HVOKH, HVOKL) is detected. | MT-110 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 13218 | High-voltage command value error | During M-Utility operation, only error for the high-voltage command value diagnostics signal on the SCN12A board is detected. | - |
| 13225 | Reading status error | During M-Utility operation, only error for the VSYNC signal on the SCN12A board is detected. | - |
| 13226 | Operation line status error | During M-Utility operation, only error for the SEDTM/FCLKTMSED signal on the SCN12A board is detected. | - |
| 13227 | Reading IP size error | The IP of the size other than the input size is inserted for shading correction of the M-Utility, so that error is detected. | - |
| 13228 | Shading correction/polygon correction data error | Error for the correction calculation is detected in shading correction of the M-Utility. | - |
| 13229 | HVCNT value error | During M-Utility operation, an out-of-spec HV is inputted. | - |
| 13240 | Start-point mask signal warning | • The start-point mask signal issued from the SCN12A board varies by 0.02%, peak to peak.<br>• The detection of 12241 error is done with 2% variations. | - |
| 13260 | Main-scan interval warning | • The FCLK signal issued from the SCN12A board varies by 0.05%, peak to peak.<br>• The detection of 14261 or 14262 error is done with 0.2% variations. | - |
| 13270 | LDIF MAX update | During bootup self-diagnostic checks, it is detected that the LD drive current value varies by more than 5 mA. In order to adjust the insufficient amount of light due to degraded LD (to maintain the same amount of light), it is necessary to vary the LD drive current by more than 5 mA. | - |
| 13289 | Format adjustment calculation result error | In M-Utility, when image format adjustments are performed, the adjustment result is out of normal range. | - |
| 13314 | Cassette detection logic error | During routine processing, the SA2 is CLOSE (the cassette is detected), but the SA1 is OPEN (the shutter is closed). | MT-85 |
| 13326 | HP return error during ejection | During cassette ejection, because the status of the sensor SA4 changes upon demagnetization of the motor that drives the IP removal unit, home-positioning of the IP removal unit is performed. | - |
| 13355 | Subscanning grip speed data update | During bootup and routine processing, the grip time for the driving shaft grip deviates by ±3% relative to its specified value, and the SZ2 transitions to OPEN, so that speed correction processing is performed. | MT-62 |
| 13386 | Conveyance CMOS cleared | During bootup, when the conveyance-related backup memory information is checked, the result indicates that it has been cleared. | - |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 13391 | Dust removal mechanism lock (1) | During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but the SZ5 does not transition from CLOSE to OPEN within the specified period of time (30 sec). | MT-68 |
| 13392 | Dust removal mechanism lock (2) | During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but the SZ5 does not transition from OPEN to CLOSE within the specified period of time (30 sec). | MT-68 |
| 13405 | Symbol table creation failure | The table used to register the function to the OS on the CPU12A board cannot be created. | 8 |
| 13411 | Serviceman reading mode | The conveyance mode of the erasure mode is set. | - |
| 13501 | Connection monitoring Com-Break detection | The communication between the CL and RU is disconnected. | - |
| 13502 | Connection monitoring Com-Down detection | Because no response is returned from the destination, the connection is disconnected once and connected again. | - |
| 13503 | Network connection error | Network connection is checked from the RU, but there is no response. | - |
| 13504 | ping execution error | In M-Utility, ping is executed, but an error results due to improper input value. | - |
| 13738 | IP loading before erasure initialization completion | Log indicating the IP processing under condition where, During bootup, the mechanical/scanner/electrical diagnostics are completed, but initialization of the erasure unit is not completed. | - |
| 13800 | Backup SRAM test error | An error is detected for the backup SRAM test in electrical utility. | 8 |
| 13801 | SDRAM test error | An error is detected for the SDRAM test in electrical utility. | 8 |
| 13802 | Checksum error | The data in the flash ROM (IPL or APPL portion) of the RU is corrupted. | 8 |
| 13803 | Flash ROM read/write error | An error is detected for the read/write test of the flash ROM in the electrical utility. | 8 |
| 13804 | CPU12A interrupt error | An error is detected for the CPU12A interrupt test in electrical utility. | 8 |
| 13805 | Network register error | An error is detected for the network register check in electrical utility. | 8 |
| 13806 | SCN12A register test error | An error is detected for the register read/write test on the SCN12A. | 8 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 13807 | SCN12A interrupt error | An error is detected for the SCN12A interrupt test in electrical utility. | 8 |
| 13808 | SCN12A H8 communication error | An error is detected for the communication test with H8 of the SCN12A in electrical utility. | 8 |
| 13809 | SND12A board register error | An error is detected for the SND12A register test in electrical utility. | 8 |
| 13810 | Sensor test error | An error is detected for the sensor test in electrical utility. | 8 |
| 13811 | Panel LED error | An error is detected for the panel LED test in electrical utility. | 8 |
| 13812 | Solenoid error | An error is detected for the solenoid test in electrical utility. | 8 |
| 13813 | Pulse motor error | An error is detected for the pulse motor test in electrical utility. | 8 |
| 13814 | SND12A board interrupt error | An error is detected for the SND12A interrupt test in electrical utility. | 8 |
| 13815 | INV12A register error | An error is detected for the INV12A register check in electrical utility. | 8 |
| 13816 | Erasure lamp test error | An error is detected for the erasure lamp test in electrical utility. | 8 |
| 13817 | Image processing CPU SDRAM test error | An error is detected for the image processing CPU SDRAM test in electrical utility. | 8 |
| 13818 | Image processing FIFO test error | An error is detected for the image processing CPU FIFO test in electrical utility. | 8 |
| 13819 | Barcode communication error | An error is detected for the barcode communication test in electrical utility. | 8 |
| 13820 | Barcode data read test error | An error is detected for the barcode reading test in electrical utility. | 8 |
| 13821 | Power supply monitoring register error | An error is detected for the power supply monitoring register check in electrical utility. | 8 |
| 14101 | Reset cancel error during image processing CPU initialization | During bootup, the reset state of the sub-CPU of the CPU12A board is canceled, but a timeout error occurs, still in the reset state. | 8 |
| 14102 | Timeout error during image processing CPU initialization | During bootup, the reset state of the sub-CPU of the CPU12A board is canceled, but a timeout error occurs, still in the reset state. | 8 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14103 | Control program area error during image processing CPU initialization | During bootup, the reset state of the sub-CPU of the CPU12A board is canceled, but a timeout error occurs in the control program area error state (image processing APPL checksum error is detected), while waiting for a predetermined period of time until the status of the sub-CPU becomes idle. | 8 |
| 14104 | FIFO test error during image processing CPU initialization | During bootup, because the sub-CPU on the CPU12A board is booted normally, a test command for FIFO (memory for transaction of image data from the sub-CPU) is sent to the sub-CPU to execute diagnostics, but an error is found in 32770 counts of data received by the main CPU. | 8 |
| 14105 | Image memory test error during image processing CPU initialization | During bootup, because the sub-CPU on the CPU12A board is booted normally, an image memory test command is sent to the sub-CPU to execute diagnostics, but an error results. | 8 |
| 14106 | SCN bus test error during image processing initialization (1) | During device initialization, the sub-CPU boots normally, but the sub-CPU detects an error as a result of performing an image data transfer test from the SCN12A board to the sub-CPU on the CPU12A board by use of the image data test path. | 6.3 |
| 14107 | SCN bus test error during image processing initialization (2) | During device initialization, the sub-CPU boots normally, but the sub-CPU detects an error as a result of performing an image data transfer test from the SCN12A board to the sub-CPU on the CPU12A board by use of the image data test path. | 6.3 |
| 14108 | Abort error during image processing CPU initialization | During bootup, the sub-CPU that is in the reset state is reset-canceled by software, but the status of the sub-CPU times out waiting for the idle state. Or, the status of the sub-CPU becomes uncontrollable. | 8 |
| 14122 | Image processing CPU sequence error | During routine processing, in order to execute image processing, an image memory clear command, image processing command, image reoutput command, etc. are sent to the sub-CPU on the CPU12A board, but a sequence error is detected by the main CPU. | 6.3 |
| 14123 | Image processing CPU parameter error | During routine processing, because an IP is loaded, an image processing command or image reoutput command is sent to the image processing section to execute the processing, but the sub-CPU detects a parameter error. (The image processing section detects an out-of-spec command.) | 8 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14124 | Image processing CPU out-of-spec command error | During routine processing, because an IP is loaded, an image processing command or image reoutput command is sent to the image processing section to execute the processing, but the sub-CPU detects a parameter error. (The image processing section detects an out-of-spec command.) | 8 |
| 14125 | Image processing CPU command reject error | During routine processing, because an IP is loaded, an image processing command or image reoutput command is sent to the image processing section to execute the processing, but the sub-CPU reports the reject status. | 8 |
| 14211 | PMT analog power supply error During bootup | During bootup, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected. | MT-110 |
| 14241 | Scanner control board error during bootup (1) | During bootup, error is detected for the PLL function, polygon rotation function, and start-point interval function on the SCN12A board. | 14.2<br>14.3 |
| 14242 | Scanner control board error during bootup (2) | During bootup, because the PMT high-voltage value is not set correctly on the SCN12A board, error is detected for the high-voltage command diagnostics. | 14.5 |
| 14251 | Photomultiplier control board error during bootup (1) | During bootup, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected (detail code: 008200). Note that if the HV is OFF, the detail code is 008000. | MT-110 |
| 14261 | Polygon rotation error (1) | During bootup, error for the polygon lock signal (PONL, POKL) is detected so that the polygonal mirror function is disabled. The start-point detection (SYN) and leading-edge detection (SED) are also disabled (detail code: D03403). | MT-112 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14271 | Laser unlit error During bootup | • During bootup, the laser (LDD) and start-point detection (SYN) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: 815403).<br>• During bootup, the laser (LDD), start-point detection (SYN), and leading-edge detection (SED) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: C15403).<br>• During bootup, error for the laser drive current value (LDIF) occurs and the start-point detection (SYN) and leading-edge detection (SED) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: C04003) | MT-116 |
| 14281 | Start-point detection error During bootup (1) | • During bootup, the disabled state of the start-point detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801C03). Alternatively, the disabled state of the start-point detection (SYN) function and error for the PLL function on the SCN12A board are detected (detail code: 800C03). Alternatively, during routine processing, the disabled state of the start-point-detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801401).<br>• During bootup, the start-point detection (SYN) function is disabled (detail code: 801402). Alternatively, the start-point detection (SSH, SSL) cannot be performed (detail code: 800002). | MT-102 |
| 14282 | Start-point detection error during bootup (2) | During bootup, only error for the start-point interval function on the SCN12A board is detected (detail code: 000400). Alternatively, error for the start-point interval function and polygon rotation detection function on the SCN12A board is detected (detail code: 001400). | 14.3 |
| 14283 | Scanning optics unit board error During bootup | During bootup, the laser (LDD), start-point detection (SYN), and leading-edge detection (SED) functions are disabled due to laser failure or disconnected connector (detail code: C05401). | MT-106 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14295 | Scanner send/receive error | During bootup, routine processing, or maintenance utility, control communication is conducted between the CPU12A board and SCN12A board, but scanner unit error is detected, so that control communication is not completed normally. | 6.3 |
| 14296 | Scanner transmission sum check error | During bootup, routine processing, or maintenance utility, communication between the CPU12A board and SCN12A board can be established, but sum check error from the SCN12A board is detected. | 6.3 |
| 14297 | Scanner receive size error | During bootup, routine processing, or maintenance utility, communication between the CPU12A board and SCN12A board can be established, but data size error from the SCN12A board is detected. | 6.3 |
| 14298 | Before-reading scanner retry error | During routine processing, because the scanner-related error is detected, the IP is returned to the cassette and the scanner is initialized. | MT-104 |
| 14299 | Error for scanner, etc. | For self-diagnostics prior to reading during routine processing, a combination of errors that should not have logically occurred were generated. | - |
| 14310 | Cassette hold failure retry | During routine processing, the SA2 transitions to CLOSE, and after the SolA1 is turned OFF, the SA3 transitions to CLOSE, so that retries (within five times) are performed. | MT-71 |
| 14312 | Cassette hold release failure retry | During routine processing, the SolA1 is turned ON to release the cassette hold, but the SA3 does not transition to CLOSE within the specified period of time, so that retries (within five times) are performed. | MT-71 |
| 14315 | Suction cup HP detection preparation positioning retry | During bootup or routine processing, the MA1 is driven (clockwise), but the SA4 does not transition to CLOSE within the specified period of time. | MT-57 |
| 14316 | Suction cup HP detection preparation return retry | During bootup or routine processing, the MA1 is driven (counterclockwise), but the SA4 does not transition to OPEN within the specified period of time. | MT-57 |
| 14317 | Suction cup HP detection retry | During bootup or routine processing, the MA1 is driven (one-pulse driving) for home positioning, but the SA4 does not transition from OPEN to CLOSE. | MT-57 |
| 14319 | Feed IP suction failure retry | During routine processing, the MA1 is driven (counterclockwise) and the PA1 is turned ON to perform IP feed leak, but the SA5 transitions to OPEN, so that retries (within three times) are performed. | MT-74 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14320 | Feed IP drop retry | During bootup and routine processing, the MA1 and MB1 are driven (clockwise) to feed the IP from the cassette, but the SA5 transitions to OPEN at the time when the IP is gripped by the rollers, so that a retry (within one time) is performed. | MT-74 |
| 14321 | Feed IP grip failure retry | During bootup and routine processing, the MB1 is driven (clockwise) to perform IP feed leak and conveyance, but the SB1 transitions to OPEN, so that retries (within three times) are performed. | MT-74 |
| 14322 | Feed conveyance retry | During routine processing, the MB1 and MC3 are driven (clockwise) to perform IP high-speed conveyance, but the SC3 transitions to OPEN, so that retries (within three times) are performed. | MT-74 |
| 14323 | Length-measurement conveyance retry | During routine processing, the MB1 and MC3 are driven (clockwise) to determine the IP size, but the SB1 transitions to OPEN, so that retries (within three times) are performed. | MT-76 |
| 14324 | Barcode reading retry | During routine processing, because an attempt to read the barcode for feed conveyance fails, retries (within three times) are performed. | MT-87 |
| 14331 | Side-positioning HP detection preparation positioning retry | During bootup or routine processing, the MC1 is driven (clockwise), but the SC1 does not transition to CLOSE. | MT-58 |
| 14332 | Side-positioning HP detection preparation return retry | During bootup or routine processing, the MC1 is driven (counterclockwise), but the SC1 does not transition to OPEN. | MT-58 |
| 14333 | Side-positioning HP detection retry | During bootup or routine processing, the MC1 is driven (one-pulse driving) to perform home positioning, but the SC1 does not transition from OPEN to CLOSE. | MT-58 |
| 14335 | Side-positioning grip HP detection preparation positioning retry | During bootup or routine processing, the MC2 is driven (counterclockwise), but the SC2 does not transition to CLOSE. | MT-59 |
| 14336 | Side-positioning grip HP detection preparation return retry | During bootup or routine processing, the MC2 is driven (clockwise), but the SC2 does not transition to OPEN. | MT-59 |
| 14337 | Side-positioning grip HP detection retry | During bootup or routine processing, the MC2 is driven (one-pulse driving) to perform home positioning, but the SC2 does not transition from OPEN to CLOSE. | MT-59 |

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14340 | IP stopper protrusion retry | During bootup or routine processing, the SolZ1 is turned ON to protrude the stopper, but the SZ4 does not transition to OPEN, so that retries (within five times) are performed. | MT-60 |
| 14341 | IP stopper retreat retry | During bootup, routine processing, U-Utility dust removal operation, and shutdown processing, the SolZ1 is turned OFF to retreat the stopper, but the SZ4 does not transition to CLOSE, so that retries (within 5 times) are performed. | MT-60 |
| 14346 | Driving shaft grip error | During bootup, the MZ2 is driven to grip the driving shaft, but the SZ2 does not transition from CLOSE to OPEN, so that a retry (within one time) is performed. | MT-62 |
| 14347 | Driven shaft grip error | During bootup and routine processing, the MZ2 is driven to grip the driven shaft, but the SZ3 does not transition to CLOSE, so that a retry (within one time) is performed. | MT-64 |
| 14348 | Both grip release error | During bootup and routine processing, the MZ2 is driven to release both grips, but the SZ2 does not transition to CLOSE, so that a retry (within one time) is performed. | MT-62 |
| 14349 | Driven shaft grip release error | During bootup, the MZ2 is driven to release the driven shaft grip, but the SZ3 does not transition to OPEN, so that a retry (within one time) is performed. | MT-64 |
| 14354 | Initialization grip movement (1) error | During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to OPEN, so that a retry (within one time) is performed. | MT-62 |
| 14355 | Initialization grip movement (2) error | During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to CLOSE or the SZ3 does not transition to CLOSE, so that a retry (within one time) is performed. | MT-62 |
| 14356 | Ejection grip error | During bootup and routine processing, the MZ2 is driven to perform ejection grip, but the SZ3 does not transition to CLOSE, so that a retry (within one time) is performed. | MT-64 |
| 14357 | No-load running error | During bootup and routine processing, the MZ2 is driven to perform no-load running, but the SZ3 does not transition to OPEN, so that a retry (within one time) is performed. | MT-64 |
| 14372 | Load IP suction failure retry | During routine processing, the PA1 is tuned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN within the specified period of time, so that retries (within three times) are performed. | MT-82 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 14373 | Load IP drop retry | During routine processing, the PA1 is turned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN at the time when the IP is released, so that retries (within three times) are performed. | MT-82 |
| 18740 | Inerasable cassette ejection | Because 11731, 11732, 11737, 11751, 11757, or 11767 occurs so that temperature control is disabled, the mode shifts to the no-erasure mode with a message displayed. The IP that is read while in the no-erasure mode is not erased. | - |
| 18741 | Incomplete erasure | Because 12736, 12756, or 12766 occurs so that a single lamp is unlit, the mode shifts to the erasure time extension mode where the erasure time is extended twice. The IP that is read while in the erasure time extension mode is erased with the extended erasure time. | 6.4 |
| 18742 | Erasure temporarily disabled mode | 12733 or 12753 occurs, and the temperature sensor (TSB1) detects an abnormal level of temperature.<br>• The mode temporarily shifts to the no-erasure mode.<br>• The IP that is read while in the no-erasure mode is not erased. | - |
| 19030 | Driver registration error | A driver cannot be registered to the OS on the CPU12A board. | 8 |
| 19031 | Driver unregistered | During bootup, a device is created without registering its driver on the CPU12A board. | 8 |
| 19032 | Device creation error | During bootup and routine processing, an OS system call fails. | 8 |
| 19034 | FPMC error | During bootup and routine processing, a FPMC driver error status is detected for the communication from the SNS12A board to the CPU12A board. | 6.2 |
| 19038 | Image processing CPU status error | During bootup and routine processing, the main CPU detects an error in the status of the sub-CPU. | 8 |
| 19039 | Device open error | During bootup and routine processing, when the motor or the like is activated, the device specified cannot be opened. | 8 |
| 19080 | OS system call error (1) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |

## 2. Error Code Table

| Error Code | Error Name | Occurrence Condition | Analysis Flow |
|---|---|---|---|
| 19081 | OS system call error (2) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19082 | OS system call error (3) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19083 | OS system call error (4) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19084 | OS system call error (5) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19085 | OS system call error (6) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19086 | OS system call error (7) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19087 | OS system call error (8) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19088 | OS system call error (9) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19089 | OS system call error (10) | During bootup or maintenance utility bootup, an OS system call fails. | 8 |
| 19090 | Software logic error | An abnormal case that is unthinkable for the RU software is encountered. | 8 |
| 19091 | Error returned by driver | A return signal of the driver called by the application is an error. The detail of the error is notified within the driver software. | 8 |
| 19094 | Socket error | A network connection between the RU and CL is established. Various types of error occur for the socket communication. | 6.1 |

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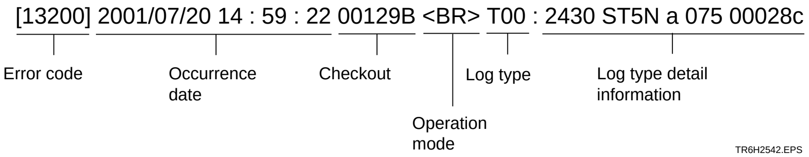
# 3. Detail Code

## 3.1 How to Understand Detail Code

The error log contains the operation mode of the RU and detail code associated with the error that occurred.

This section describes the detail code display format and meaning of each item.

### ■ Display of Detail Code (A05 or Later)



```
[13200] 2001/07/20 14 : 59 : 22 00129B <BR> T00 : 2430 ST5N a 075 00028c
```

### ■ Meaning of Detail Code (A05 or Later)

#### ● Operation mode

Represents the RU operation status and CL-RU communication status upon occurrence of an error.

◇ ***REFERENCE*** ◇

*The first and second letters represent the RU operation status and CL-RU communication status, respectively.*

< B R >

CL-RU communication status

| Display | W (Wait) | R (Run) | T (Terminate) |
|---|---|---|---|
| Meaning | An error occurred immediately after startup, and the connection is broken. | The connection has been completed at the time of error occurrence. | An error occurred during shutdown processing, and the connection was |

RU operation status

| Display | S (Start) | B (Busy) | I (Idle) |
|---|---|---|---|
| Meaning | An error occurred immediately after startup of the RU. | An error occurred during IP conveyance or during IP processing. | An error occurred while the RU is in idle state. |

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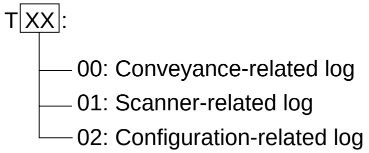
### ● Log type

Log types include the conveyance-related log, scanner-related log, and configuration-related log.

The causes of error occurrence may be narrowed down by the log type.


T XX :
00: Conveyance-related log
01: Scanner-related log
02: Configuration-related log

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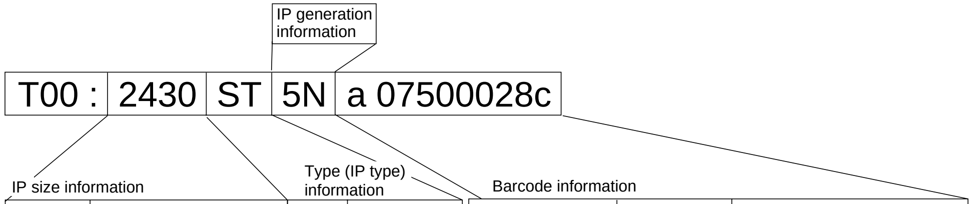
- T00: Conveyance-related log

For the conveyance-related log, the IP size, type (IP type), IP generation information, and barcode information are displayed.


IP generation information
T00 : 2430 ST 5N a 07500028c
IP size information
Type (IP type) information
Barcode information

| Display | IP size |
|---|---|
| 18x24cm | 1824 |
| 8"x10" | 0810 |
| 24x30cm | 2430 |
| 10"x12" | 1012 |
| 14"x14" | 1414 or 3535 |
| 14"x17" | 1417 or 3543 |
| Unread | -------- |
| -------- | The size could not be read. |

| Display | IP type |
|---|---|
| ST | ST |
| HR | HR |
| - - | The type could not be identified. |
| ** | BCR reading error |
| — | No BCR |

| Barcode reader | Display | Meaning |
|---|---|---|
| Available | a--------c | The barcode could not be read. |
| | a12345678c | The barcode was read normally. |
| | a********c | The barcode was read but the data is defective. |
| Not available | -------- | No barcode was found. |

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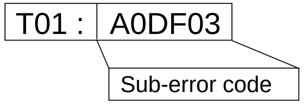
- T01: Scanner-related log

For the scanner-related log, the sub-error code is displayed.

When the sub-error code is displayed, refer to the scanner error detail code and perform error log analysis.

☞ “3.2 Scanner Error Detail Code, ■ Meaning of the Six-Digit Detail Code”


T01 : A0DF03
Sub-error code

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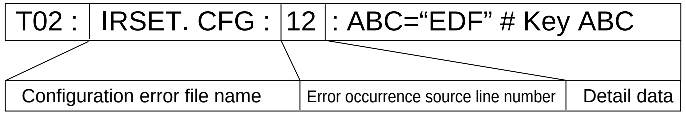
**◇ REFERENCE ◇**

*If there is no sub-error code, the sub-error code field displays “– – – – –”.*

- T02: Configuration-related log

For the configuration-related log, the configuration error file name, error occurrence source line number, and detail data are displayed.


T02 : IRSET. CFG : 12 : ABC=“EDF” # Key ABC
Configuration error file name
Error occurrence source line number
Detail data

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## 3.2 Detail Codes for Scanner Errors

Scanner errors are detected by checking a plurality of scanner I/O states and finding a combination of defects and/or failures.

Each I/O status at the time of error occurrence can be identified by checking the detail code in the error log.

### ■ Display of Detail Code (A04 or Earlier)

The detail code is displayed in six hexadecimal digits, located in the error log as shown below.

Error code

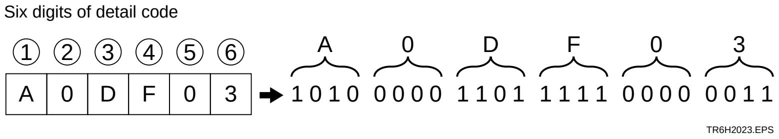
```
12256   2000.10.07 13:12:19 00257D tiphscan____
        3D0004 ScnCmFnc.c 2817
12255   2000.10.07 13:12:10 00258D tiphscan____
        3D0004 400000,00 00 00 609C 6098
                          •
                          •
                          •
```

Detail code

FR6H2521.EPS

### ■ Meaning of Six-Digit Detail Code

To each bit of a six-digit detail code is assigned an object to be checked during error check, so that a bit value of “1” indicates that the object to checked is in error.



| NO. | | Object to be checked | Signal source |
|---|---|---|---|
| ① | 1 | Start-point detection sensor | SYN12A board |
| | 2 | Leading-edge detection sensor | SED12A board |
| | 3 | Start-point mask signal | SCN12A board |
| | 4 | Polygon index | POL (polygon) |
| ② | 1 | – | – |
| | 2 | – | – |
| | 3 | – | – |
| | 4 | LD drive current | LDD12A board |
| ③ | 1 | PMT analog power supply | PMT12A board |
| | 2 | Laser light intensity error | LDD12A board |
| | 3 | Polygon lock | POL (polygon) |
| | 4 | Polygon rpm | SCN12A board |
| ④ | 1 | PLL function | SCN12A board |
| | 2 | Start-point period | SYN12A board |
| | 3 | High-voltage power supply | PMT12A board |
| | 4 | High-voltage command value diagnostics | SCN12A board |
| ⑤ | 1 | – | – |
| | 2 | – | – |
| | 3 | – | – |
| | 4 | – | – |
| ⑥ | 1 | – | – |
| | 2 | – | – |
| | 3 | Reading status error | SCN12A board |
| | 4 | Operation line status error | SCN12A board |

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| Hexadecimal | Value of bit | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 1 | 1 |
| 4 | 0 | 1 | 0 | 0 |
| 5 | 0 | 1 | 0 | 1 |
| 6 | 0 | 1 | 1 | 0 |
| 7 | 0 | 1 | 1 | 1 |
| 8 | 1 | 0 | 0 | 0 |
| 9 | 1 | 0 | 0 | 1 |
| A | 1 | 0 | 1 | 0 |
| B | 1 | 0 | 1 | 1 |
| C | 1 | 1 | 0 | 0 |
| D | 1 | 1 | 0 | 1 |
| E | 1 | 1 | 1 | 0 |
| F | 1 | 1 | 1 | 1 |

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# 4. Error Code Analysis Flow (Mechanism)

## 10300, 10302, 12302

### 10300 IP Sensor Logical Inconsistency

During bootup, the remaining IP is ejected, but the sensor having logical inconsistency for its IP sensor result is detected.

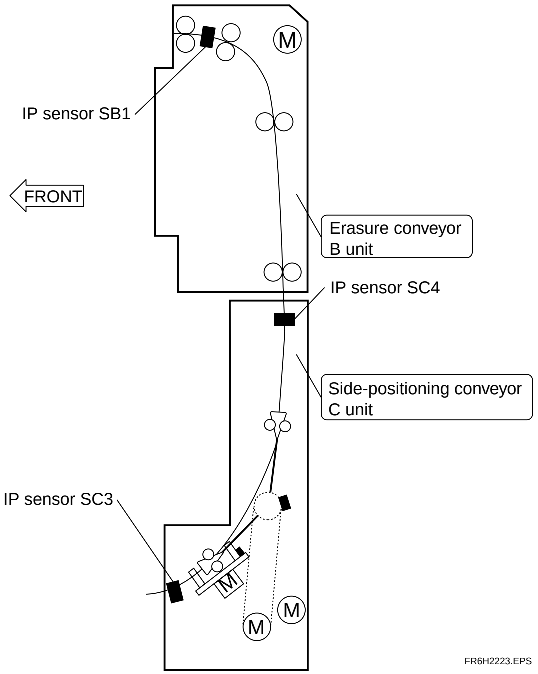
### 10302 Broken wire sensor detected

During bootup, the result of IP search detects the presence of an IP, but the backup memory information indicates that there is no IP in the machine. The backup memory has a record indicating that the IP conveyance was performed before power recovery.

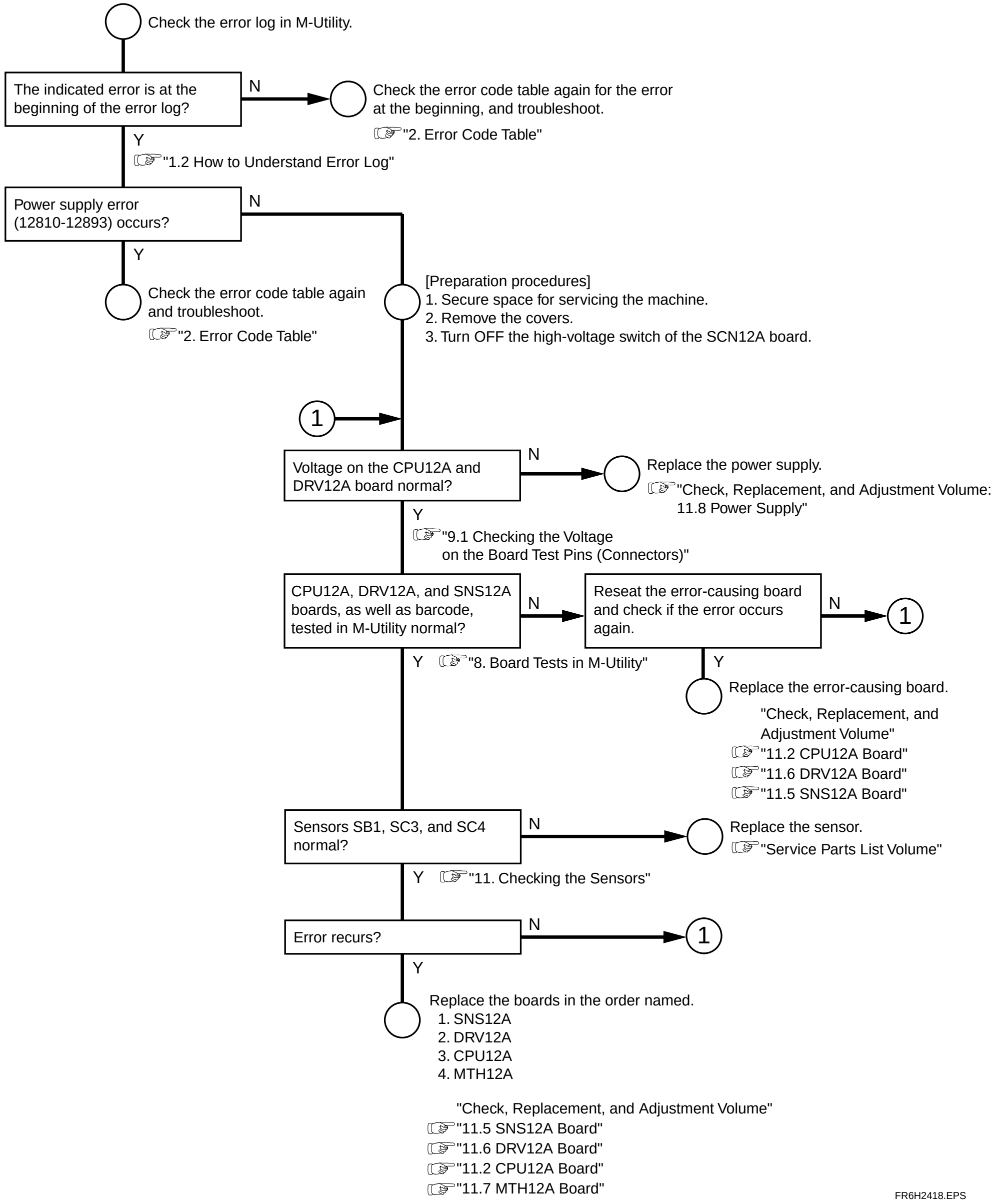
### 12302 IP location information logical failure

During bootup, the result of IP search indicates the presence of an IP, but the backup memory information indicates that there is no IP in the machine. Because there is no result of clearing the CMOS, it is logically inconsistent.

### ■ I/O Locations



### ■ Analysis Flow



Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

①

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.
- N: ①
- Y: Replace the error-causing board.
  "Check, Replacement, and Adjustment Volume"
  ☞"11.2 CPU12A Board"
  ☞"11.6 DRV12A Board"
  ☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensors SB1, SC3, and SC4 normal?

N: Replace the sensor. ☞"Service Parts List Volume"

Y: ☞"11. Checking the Sensors"

Error recurs?

N: ①

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2418.EPS

# 10301, 12301

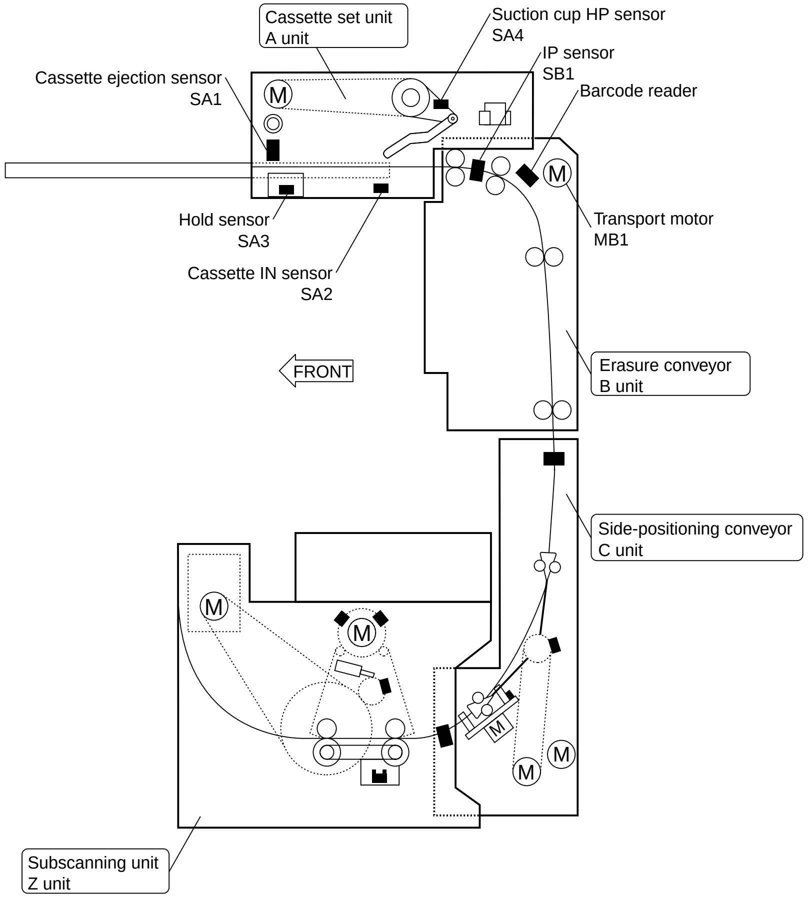
## 10301 Sensor error

During bootup, the sensor is turned OFF after the timeout of the mechanical operation is detected, but the sensor does not transition to CLOSE.

## 12301 Sensor error

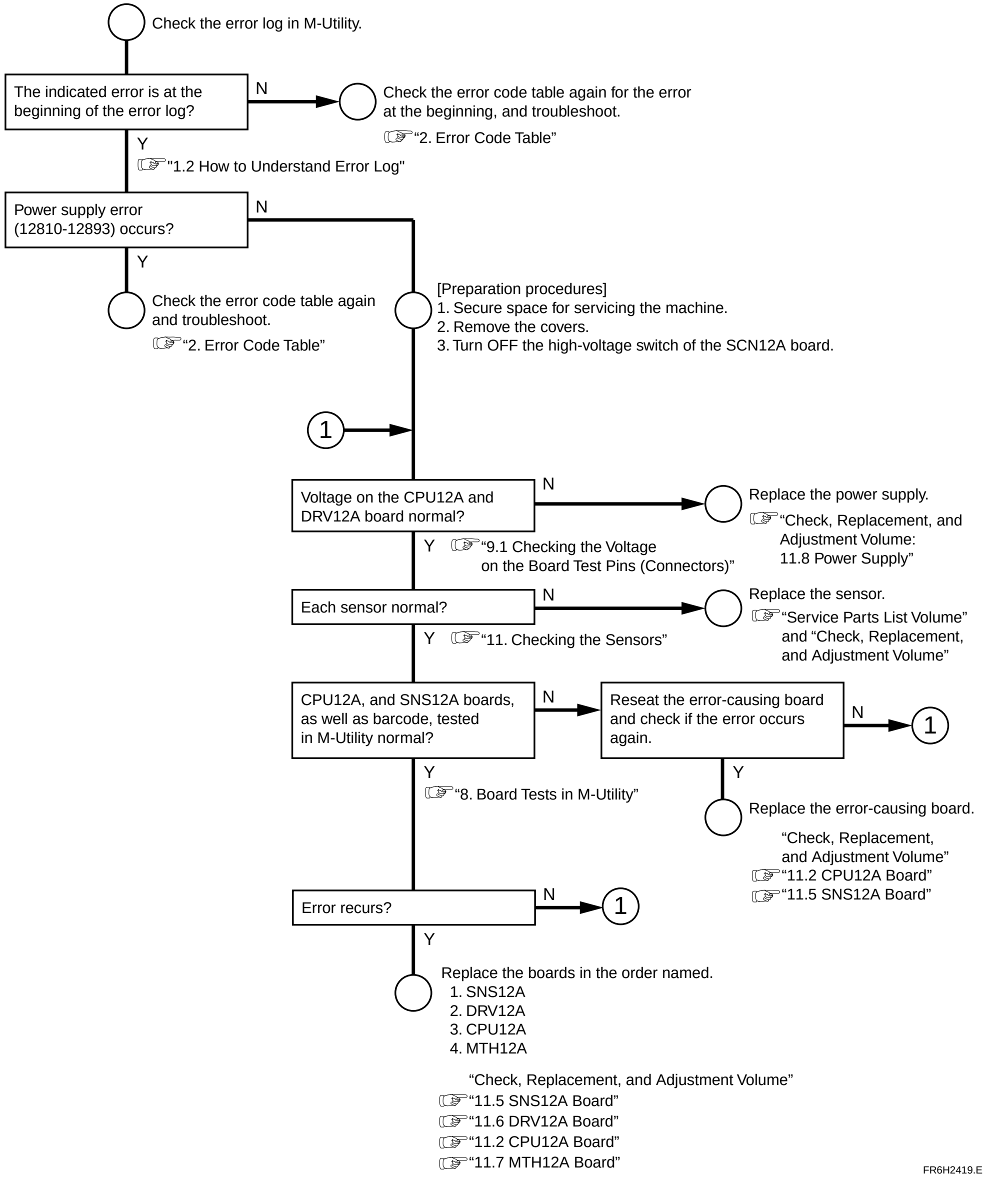
During routine processing, the sensor is turned OFF after the timeout of the mechanical operation is detected, but the sensor does not transition to CLOSE.

## ■ I/O Locations


Cassette set unit
A unit
Suction cup HP sensor
SA4
IP sensor
SB1
Barcode reader
Cassette ejection sensor
SA1
M
Hold sensor
SA3
Cassette IN sensor
SA2
Transport motor
MB1
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Subscanning unit
Z unit

FR6H2205.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Each sensor normal?
N
Replace the sensor.
☞"Service Parts List Volume" and "Check, Replacement, and Adjustment Volume"
Y
☞"11. Checking the Sensors"
CPU12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.5 SNS12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2419.EPS

# 10303, 10304, 10305, 11303, 12304, 12305

### 10303 IP initialization search error

During bootup, the result of location information confirmation for IP search indicates the absence of an IP, but the backup memory information indicates the presence of an IP in the machine. System shutdown is selected via user intervention.

### 10304 IP conveyance error during bootup (1)

During bootup, the IP search detects the presence of an IP. The CLOSE state of the SB1, SC3, and SC4 is detected, and the MB1 and MC3 are driven, but any of the sensors does not transition to OPEN. The backup memory has a record indicating the presence of an IP in the machine.

### 10305 IP conveyance error during bootup (2)

During bootup, the IP search detects that there is an IP in the machine that is difficult to convey.

The backup memory has a record indicating the absence of an IP in the machine. IP conveyance is not performed before power-OFF. It is presumed that the backup memory has been cleared.

### 11303 IP initialization search error

During bootup, the IP search determines that there is no IP.

However, the conveyance backup memory has a record indicating the presence of an IP in the machine for routine processing.

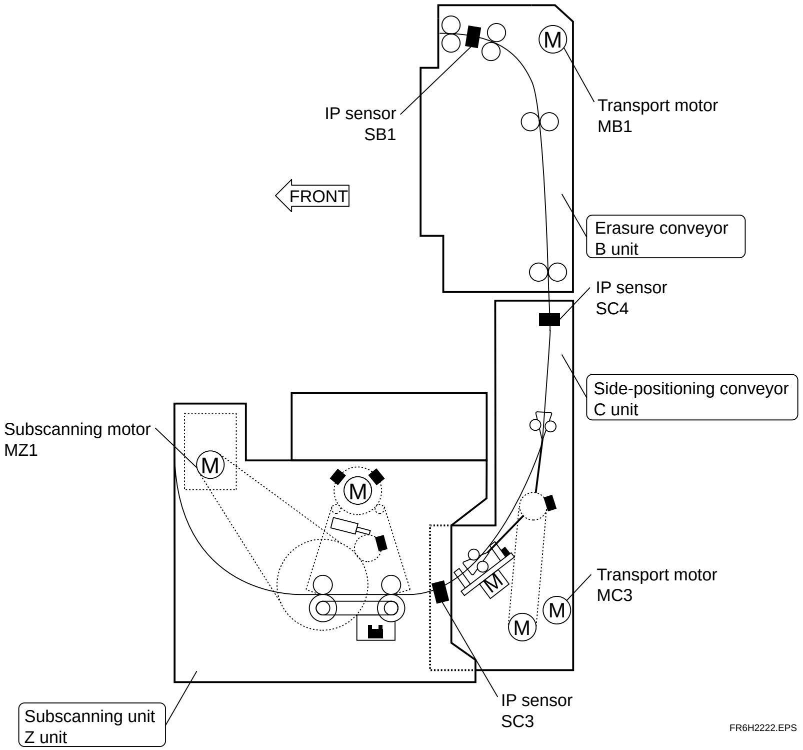
### 12304 IP movement error at scanner unit During bootup

During bootup, the MB1, MC3, and MZ1 are driven (clockwise) for IP search, but the SC3 does not transition to OPEN within the specified period of time.

### 12305 IP movement error at erasure conveyor/side-positioning conveyor During bootup

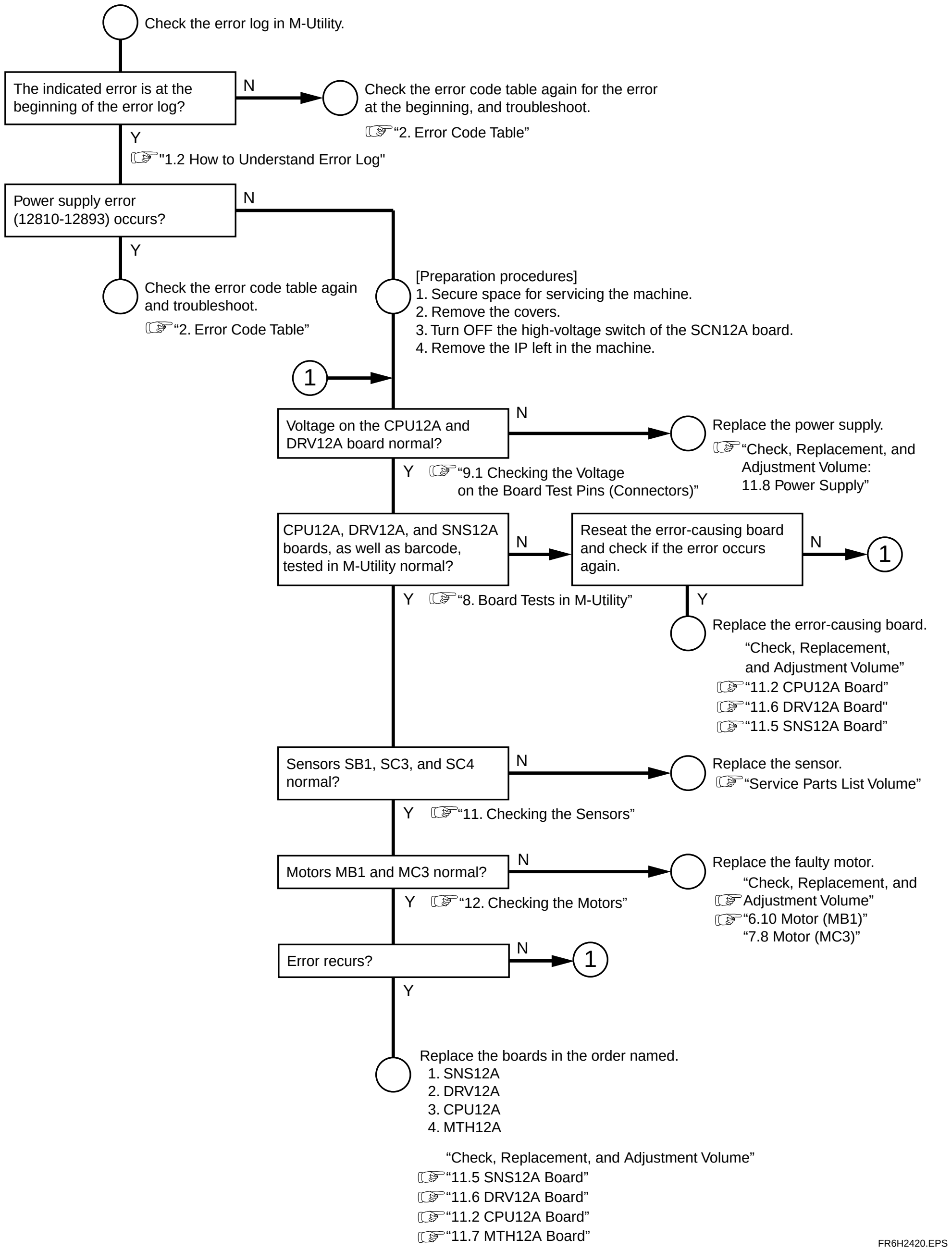
During bootup, the MB1 and MC3 are driven (clockwise) for IP search, but the SB1 or SC4 does not transition to CLOSE within the specified period of time.

## ■ I/O Locations


IP sensor
SB1
Transport motor
MB1
FRONT
Erasure conveyor
B unit
IP sensor
SC4
Side-positioning conveyor
C unit
Subscanning motor
MZ1
M
Transport motor
MC3
Subscanning unit
Z unit
IP sensor
SC3

FR6H2222.EPS

## ■ Analysis Flow


Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
4. Remove the IP left in the machine.

1

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.

N: 1

Y: Replace the error-causing board. "Check, Replacement, and Adjustment Volume" ☞"11.2 CPU12A Board" ☞"11.6 DRV12A Board" ☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensors SB1, SC3, and SC4 normal?

N: Replace the sensor. ☞"Service Parts List Volume"

Y: ☞"11. Checking the Sensors"

Motors MB1 and MC3 normal?

N: Replace the faulty motor. "Check, Replacement, and ☞Adjustment Volume" ☞"6.10 Motor (MB1)" "7.8 Motor (MC3)"

Y: ☞"12. Checking the Motors"

Error recurs?

N: 1

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2420.EPS

# 10306, 10307

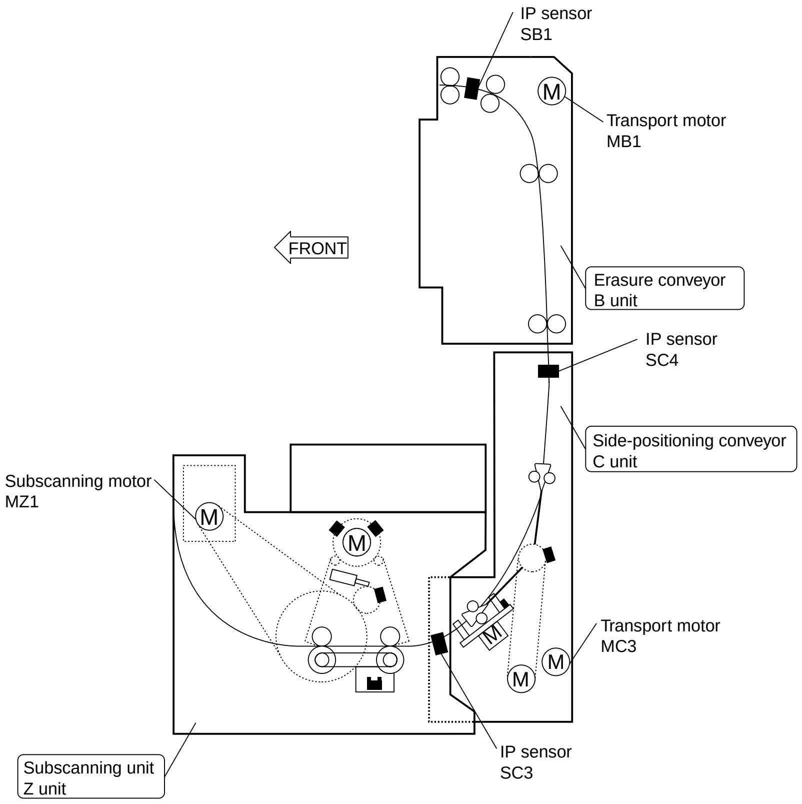
### 10306 IP positioning error at side-positioning conveyor during bootup

During bootup, the MB1 and MC3 are driven (clockwise) to perform side-positioning operation for remaining IP processing, but the SC3 does not transition to CLOSE within the specified period of time.

### 10307 Length-measurement conveyance error during bootup

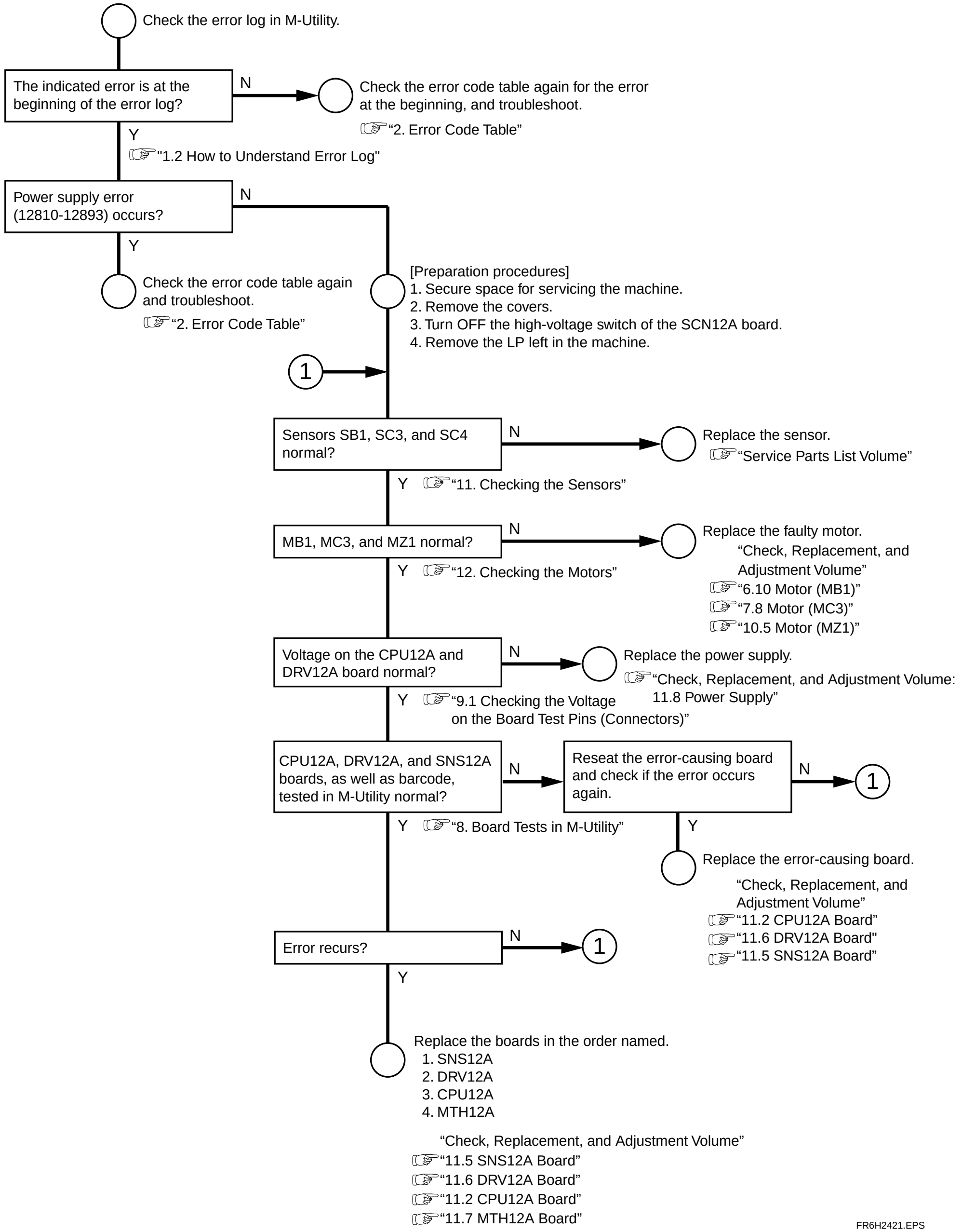
During bootup, the MZ1, MC3, and MB1 are driven (counterclockwise) to measure the IP size for remaining IP processing, but the SC3 does not transition to CLOSE within the specified period of time. Alternatively, it transitions to CLOSE but not to OPEN.

## ■ I/O Locations


IP sensor
SB1
Transport motor
MB1
FRONT
Erasure conveyor
B unit
IP sensor
SC4
Side-positioning conveyor
C unit
Subscanning motor
MZ1
Transport motor
MC3
Subscanning unit
Z unit
IP sensor
SC3
M

FR6H2211.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
4. Remove the LP left in the machine.
1
Sensors SB1, SC3, and SC4 normal?
N
Replace the sensor.
☞"Service Parts List Volume"
Y
☞"11. Checking the Sensors"
MB1, MC3, and MZ1 normal?
N
Replace the faulty motor.
"Check, Replacement, and Adjustment Volume"
☞"6.10 Motor (MB1)"
☞"7.8 Motor (MC3)"
☞"10.5 Motor (MZ1)"
Y
☞"12. Checking the Motors"
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2421.EPS

# 10318, 12318, 12326, 14315, 14316, 14317

### 10318 Suction cup HP operation error

During bootup or routine processing, because error (14315, 14316, 14317) is detected, retries (four times or more) are performed, but error (fatal error) results.

### 12318 Suction cup return error

During bootup and routine processing, SA4 does not transition to CLOSE for suction cup HP check.

### 12326 HP return error during ejection

During routine processing, the MA1 is driven (counterclockwise) to perform suction cup home positioning after the cassette is ejected, but the SA4 does not transition to CLOSE.

### 14315 Suction cup HP detection preparation positioning retry

During bootup or routine processing, the MA1 is driven (clockwise), but the SA4 does not transition to CLOSE within the specified period of time.

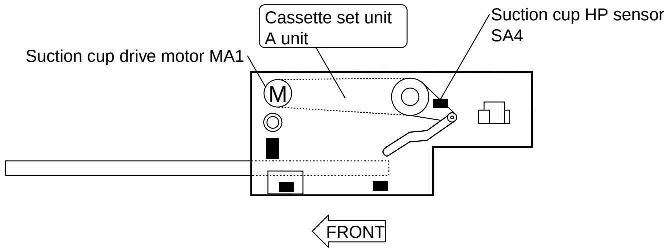
### 14316 Suction cup HP detection preparation return retry

During bootup or routine processing, the MA1 is driven (counterclockwise), but the SA4 does not transition to OPEN within the specified period of time.

### 14317 Suction cup HP detection retry

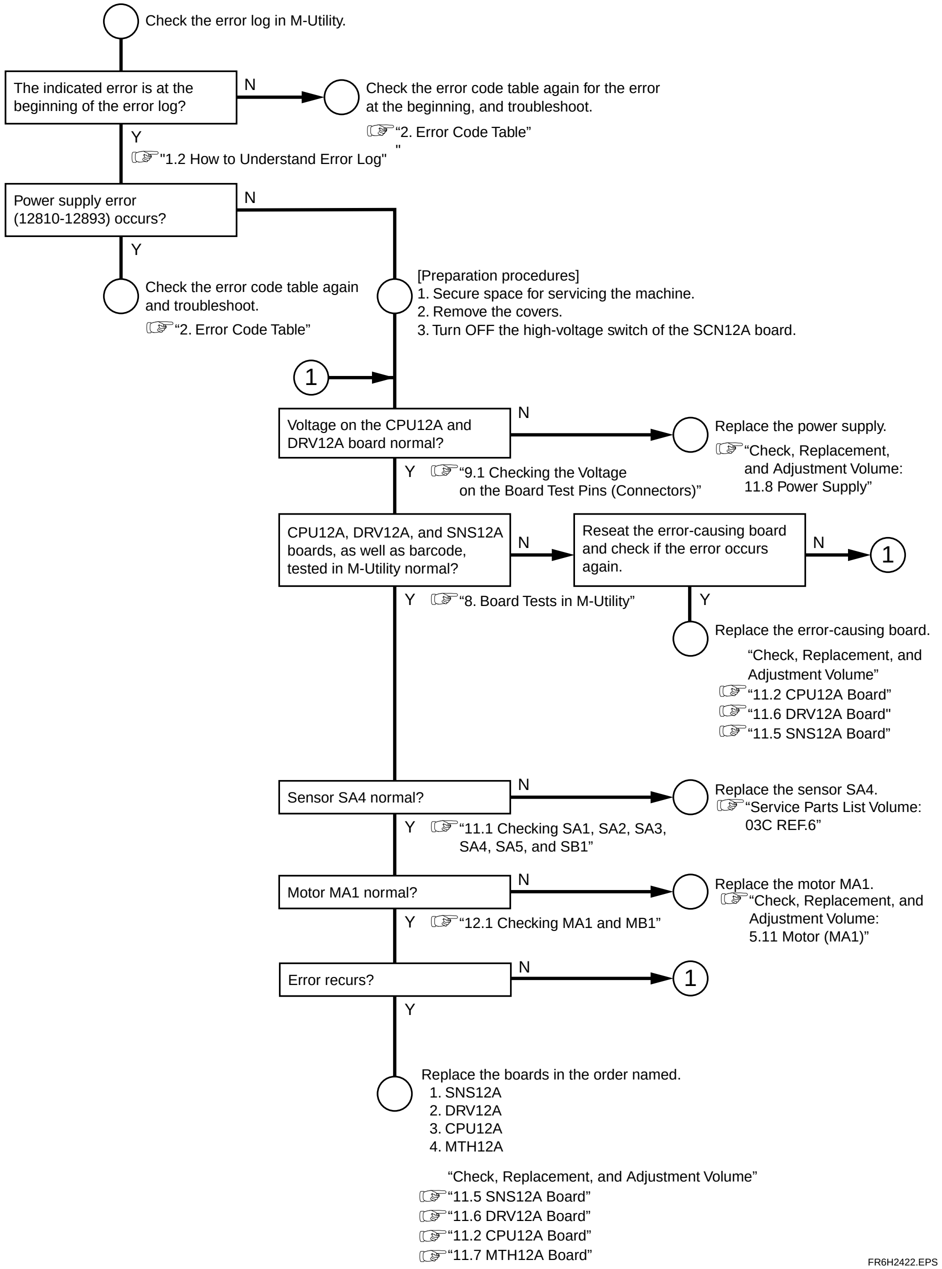
During bootup or routine processing, the MA1 is driven (one-pulse driving) for home positioning, but the SA4 does not transition from OPEN to CLOSE.

## ■ I/O Locations


Cassette set unit
A unit
Suction cup HP sensor
SA4
Suction cup drive motor MA1
M
FRONT

FR6H2206.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensor SA4 normal?
N
Replace the sensor SA4.
☞"Service Parts List Volume: 03C REF.6"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Motor MA1 normal?
N
Replace the motor MA1.
☞"Check, Replacement, and Adjustment Volume: 5.11 Motor (MA1)"
Y
☞"12.1 Checking MA1 and MB1"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2422.EPS

# 10334, 12334, 14331, 14332, 14333

### 10334 Side-positioning HP operation error

During bootup or routine processing, because error (14331, 14332, 14333) is detected, retries (four times or more) are performed, but error (fatal error) results.

### 12334 Side-positioning operation error

During routine processing, the MC1 is driven (clockwise) to perform side-positioning home positioning, but the SC1 does not transition to CLOSE.

### 14331 Side-positioning HP detection preparation positioning retry

During bootup or routine processing, the MC1 is driven (clockwise), but the SC1 does not transition to CLOSE.

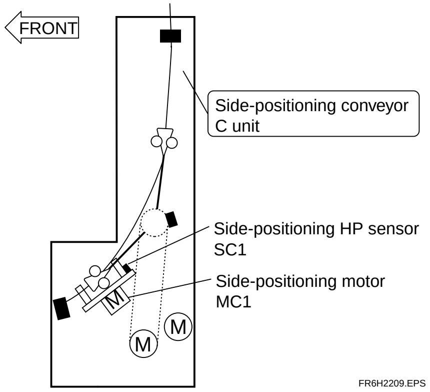
### 14332 Side-positioning HP detection preparation return retry

During bootup or routine processing, the MC1 is driven (counterclockwise), but the SC1 does not transition to OPEN.

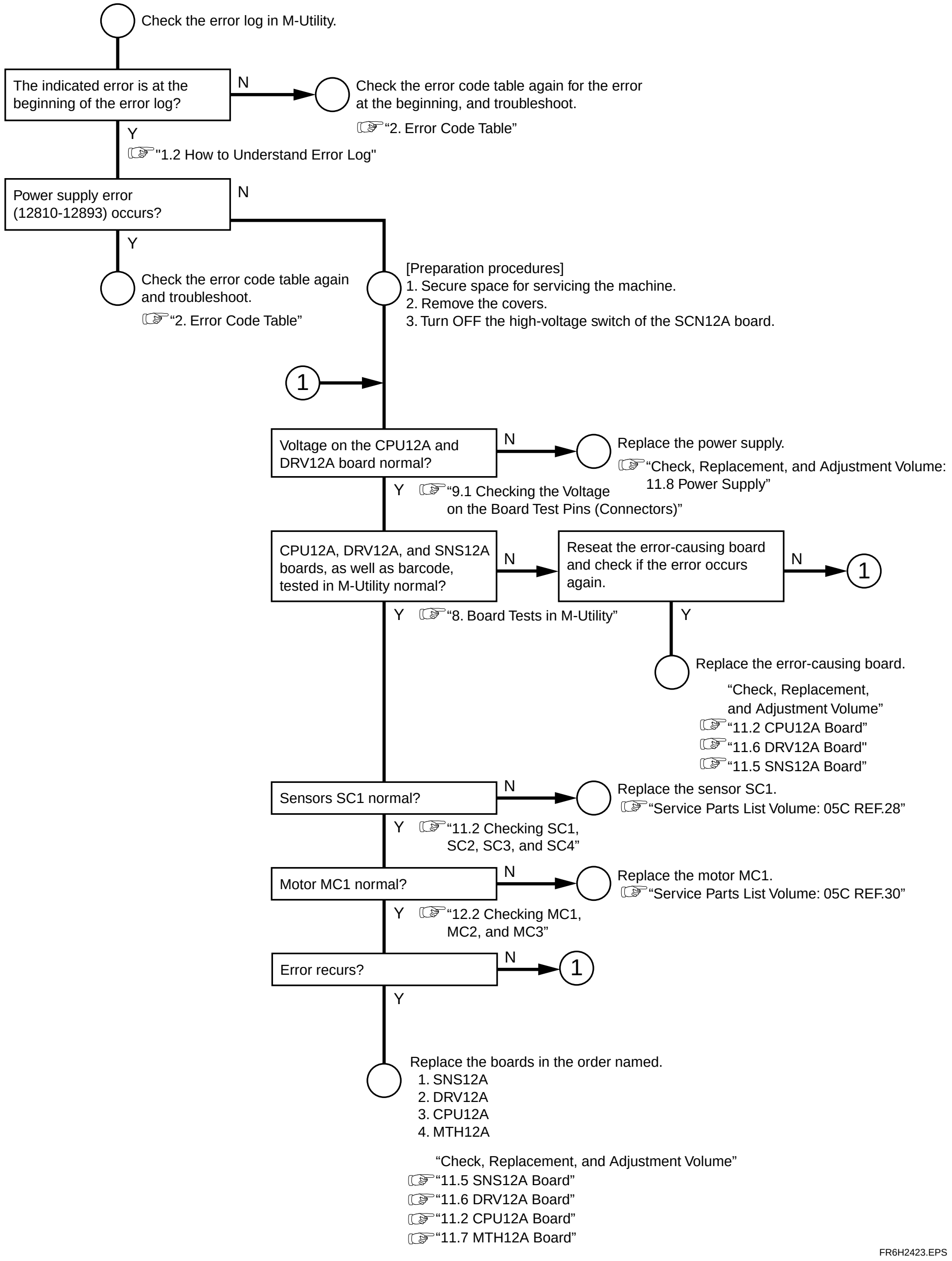
### 14333 Side-positioning HP detection retry

During bootup or routine processing, the MC1 is driven (one-pulse driving) to perform home positioning, but the SC1 does not transition from OPEN to CLOSE.

## ■ I/O Locations


FRONT
Side-positioning conveyor C unit
Side-positioning HP sensor SC1
Side-positioning motor MC1
M
M
M
FR6H2209.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensors SC1 normal?
N
Replace the sensor SC1.
☞"Service Parts List Volume: 05C REF.28"
Y
☞"11.2 Checking SC1, SC2, SC3, and SC4"
Motor MC1 normal?
N
Replace the motor MC1.
☞"Service Parts List Volume: 05C REF.30"
Y
☞"12.2 Checking MC1, MC2, and MC3"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2423.EPS

## 10338, 12338, 14335, 14336, 14337

### 10338 Side-positioning grip HP operation error

During bootup or routine processing, because error (14335, 14336, 14337) is detected, retries (four times or more) are performed, but error (fatal error) results.

### 12338 Side-positioning grip operation error

During routine processing, the MC2 is driven (counterclockwise) to perform side-positioning grip home positioning, but the SC2 does not transition to CLOSE.

### 14335 Side-positioning grip HP detection preparation positioning retry

During bootup or routine processing, the MC2 is driven (counterclockwise), but the SC2 does not transition to CLOSE.

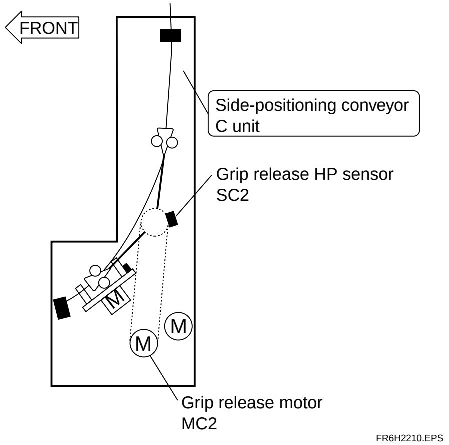
### 14336 Side-positioning grip HP detection preparation return retry

During bootup or routine processing, the MC2 is driven (clockwise), but the SC2 does not transition to OPEN.

### 14337 Side-positioning grip HP detection retry

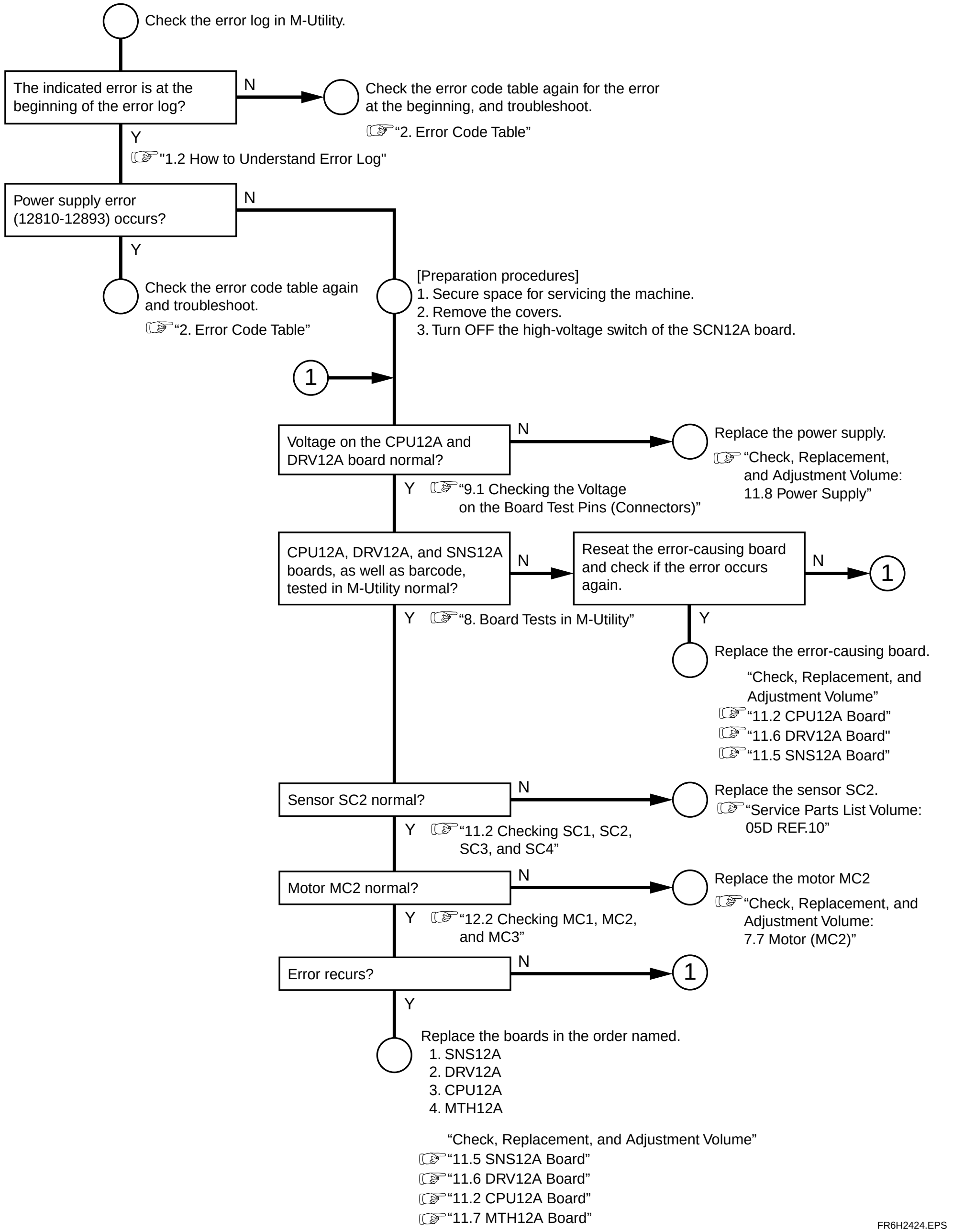
During bootup or routine processing, the MC2 is driven (one-pulse driving) to perform home positioning, but the SC2 does not transition from OPEN to CLOSE.

## ■ I/O Locations


FRONT
Side-positioning conveyor C unit
Grip release HP sensor SC2
M
M
M
Grip release motor MC2

FR6H2210.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensor SC2 normal?
N
Replace the sensor SC2.
☞"Service Parts List Volume: 05D REF.10"
Y
☞"11.2 Checking SC1, SC2, SC3, and SC4"
Motor MC2 normal?
N
Replace the motor MC2
☞"Check, Replacement, and Adjustment Volume: 7.7 Motor (MC2)"
Y
☞"12.2 Checking MC1, MC2, and MC3"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2424.EPS

# 10340, 10341, 11340, 11341, 14340, 14341

## ■ Error Occurrence Conditions

### 10340 IP stopper protrusion error

During bootup, the SolZ1 is turned ON to protrude the stopper, but the SZ4 does not transition to OPEN within the specified period of time. Retries (six times or more) are performed, but error results.

### 10341 IP stopper retreat error

During bootup and shutdown processing, the SolZ1 is turned OFF to retreat the stopper, but the SZ4 does not transition to CLOSE within the specified period of time. Retries (six times or more) are performed, but error results.

### 11340 IP stopper protrusion error

During routine processing, the SOLZ1 is turned ON to protrude the IP stopper after IP feed leak, but the SZ4 transitions to CLOSE. SZ4 checks are retried (two times or more), but error results.

### 11341 IP stopper retreat error

During routine processing and U-Utility dust removal operation, the SOLZ1 is turned OFF to retreat the IP stopper, but the SZ4 transitions to OPEN. SZ4 checks are retried (six times or more), but error results.

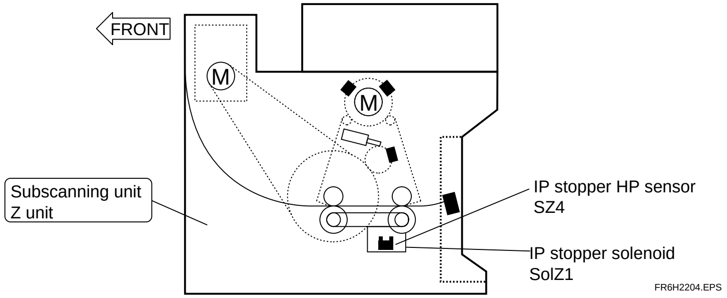
### 14340 IP stopper protrusion retry

During bootup or routine processing, the SolZ1 is turned ON to protrude the stopper, but the SZ4 does not transition to OPEN, so that retries (within five times) are performed.

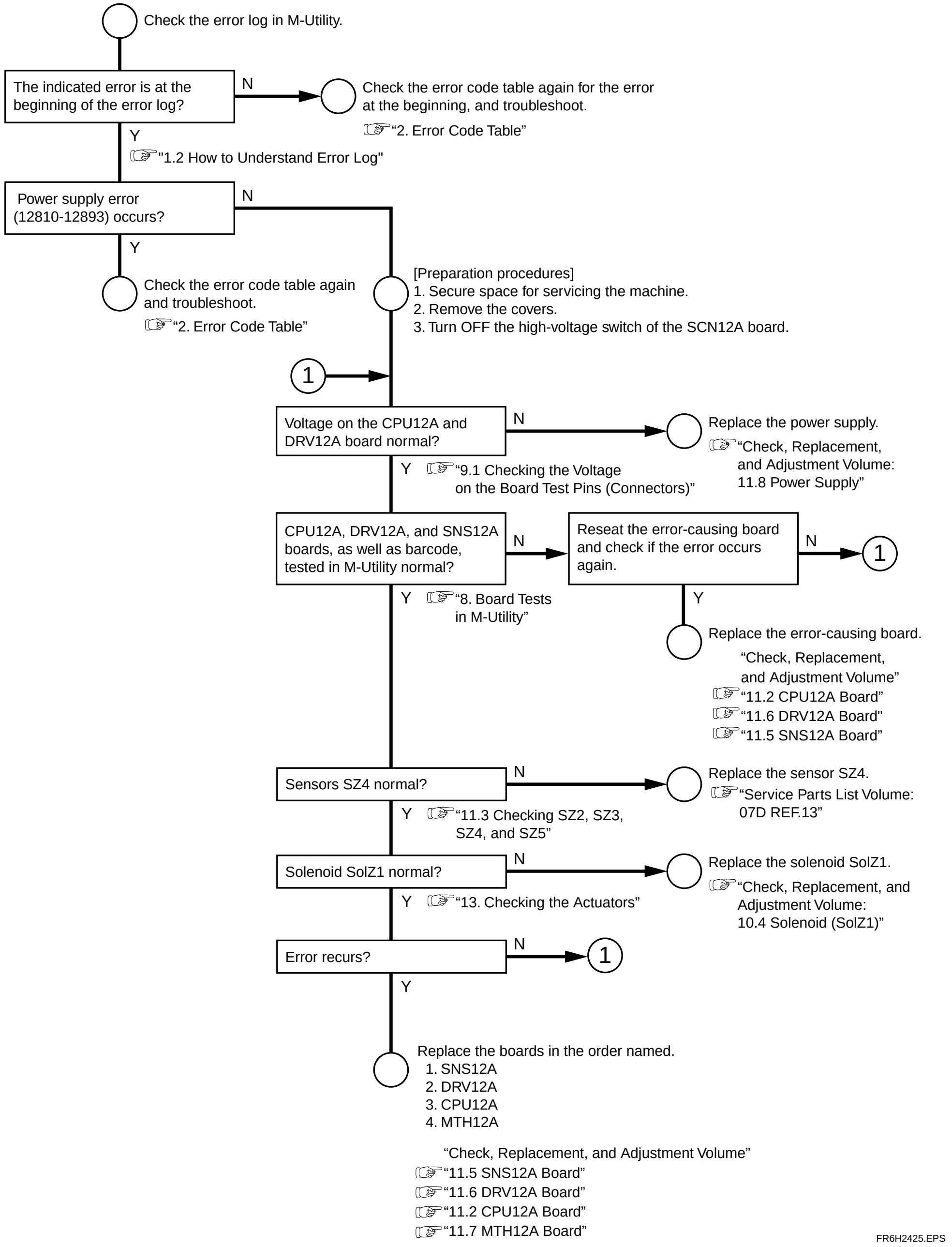
### 14341 IP stopper retreat retry

During bootup, routine processing, U-Utility dust removal operation, and shutdown processing, the SolZ1 is turned OFF to retreat the stopper, but the SZ4 does not transition to CLOSE, so that retries (within 5 times) are performed.

## ■ I/O Locations


FRONT
M
M
Subscanning unit
Z unit
IP stopper HP sensor
SZ4
IP stopper solenoid
SolZ1
FR6H2204.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensors SZ4 normal?
N
Replace the sensor SZ4.
☞"Service Parts List Volume: 07D REF.13"
Y
☞"11.3 Checking SZ2, SZ3, SZ4, and SZ5"
Solenoid SolZ1 normal?
N
Replace the solenoid SolZ1.
☞"Check, Replacement, and Adjustment Volume: 10.4 Solenoid (SolZ1)"
Y
☞"13. Checking the Actuators"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2425.EPS

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# 10346, 10348, 10353, 10355, 12346, 12348, 12353, 13355, 14346, 14348, 14354, 14355

### 10346 Driving shaft grip error

During bootup, the MZ2 is driven to grip the driving shaft, but the SZ2 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results.

### 10348 Both grip release error

During bootup, the MZ2 is driven to release both grips, but the SZ2 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results.

### 10353 Driving shaft correction grip error

During bootup, the MZ2 is driven to correct the speed, but the SZ2 does not transition to OPEN within the specified period of time.

### 10355 Initialization grip movement (2) error

During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to CLOSE or the SZ3 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results.

### 12346 Driving shaft grip error

During routine processing, the MZ2 is driven to perform driving-shaft slow grip after driven-shaft grip is completed, but the SZ2 does not transition from CLOSE to OPEN.

### 12348 Both grip release error

During bootup and routine processing, the MZ2 is driven to release both grips, but the SZ2 does not transition to CLOSE. Retries (two times or more) are performed, but error results.

### 12353 Driving shaft correction grip error

During routine processing, the MZ2 is driven to perform driving-shaft correction grip, but the SZ2 does not transition to OPEN.

### 13355 Subscanning grip speed data update

During bootup and routine processing, the grip time for the driving shaft grip deviates by ±3% relative to its specified value, and the SZ2 transitions to OPEN, so that speed correction processing is performed.

### 14346 Driving shaft grip error

During bootup, the MZ2 is driven to grip the driving shaft, but the SZ2 does not transition from CLOSE to OPEN, so that a retry (within one time) is performed.

### 14348 Both grip release error

During bootup and routine processing, the MZ2 is driven to release both grips, but the SZ2 does not transition to CLOSE, so that a retry (within one time) is performed.

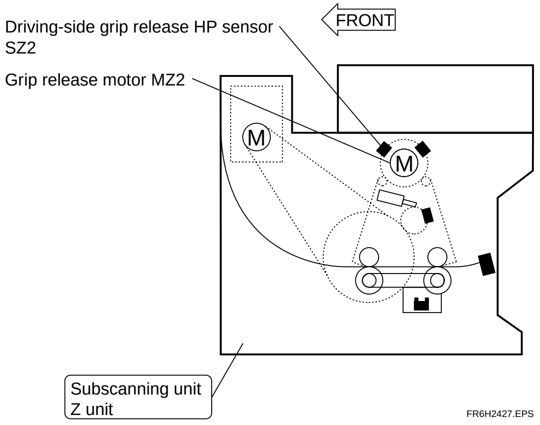
### 14354 Initialization grip movement (1) error

During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to OPEN, so that a retry (within one time) is performed.

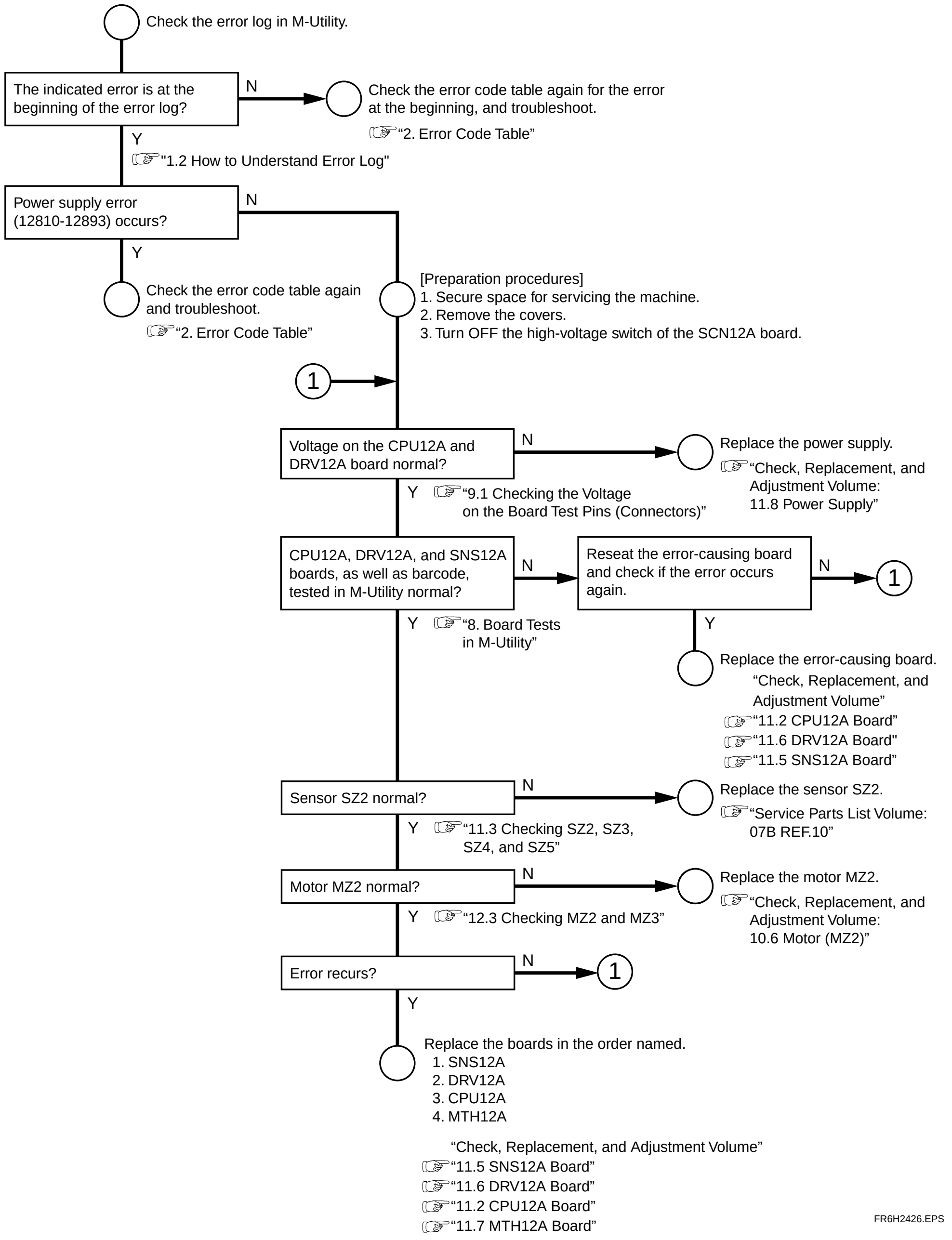
### 14355 Initialization grip movement (2) error

During bootup, the MZ2 is driven to check the grip state, but the SZ2 does not transition to CLOSE or the SZ3 does not transition to CLOSE, so that a retry (within one time) is performed.

## I/O Locations



## Analysis Flow



Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot.
☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

1

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.
N: 1
Y: Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensor SZ2 normal?

N: Replace the sensor SZ2.
☞"Service Parts List Volume: 07B REF.10"

Y: ☞"11.3 Checking SZ2, SZ3, SZ4, and SZ5"

Motor MZ2 normal?

N: Replace the motor MZ2.
☞"Check, Replacement, and Adjustment Volume: 10.6 Motor (MZ2)"

Y: ☞"12.3 Checking MZ2 and MZ3"

Error recurs?

N: 1

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2426.EPS

# 10347, 10349, 10354, 10356, 10357, 12347, 12349, 12352, 12354, 12355, 12356, 12357, 14347, 14349, 14356, 14357

### 10347 Driven shaft grip error

During bootup, the MZ2 is driven to grip the driven shaft, but the SZ3 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results.

### 10349 Driven shaft grip release error

During bootup, the MZ2 is driven to release the driven shaft grip, but the SZ3 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results.

### 10354 Initialization grip movement (1) error

During bootup, the MZ2 is driven to check the grip state, but the SZ3 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results

### 10356 Ejection grip error

During bootup, the MZ2 is driven to perform ejection grip, but the SZ3 does not transition to CLOSE within the specified period of time. Retries (two times or more) are performed, but error results.

### 10357 No-load running error

During bootup, the MZ2 is driven to perform no-load running, but the SZ3 does not transition to OPEN within the specified period of time. Retries (two times or more) are performed, but error results.

### 12347 Driven shaft grip error

During routine processing, the MZ2 is driven to grip the driven shaft after side-positioning is completed, but the SZ3 does not transition to CLOSE. Retries (two times or more) are performed, but error results.

### 12349 Driven shaft grip release error

During routine processing, the MZ2 is driven to release the driven shaft slow grip after reading, but the SZ3 does not transition to OPEN.

### 12352 Driving shaft grip error stop

During bootup and routine processing, the grip time for the driving shaft grip deviates by ±3% relative to its specified value, but the SZ2 is CLOSE.

### 12354 Driving shaft grip disorder

During routine processing, the MZ2 is driven to perform driving-shaft slow grip and the SZ2 transitions from CLOSE to OPEN, but the grip time deviates by ±3% relative to its specified value.

### 12355 Driving shaft grip malfunction

During bootup and routine processing, because the grip time for the driving shaft grip deviates by ±6% relative to its specified value, speed correction processing and operation check are performed.

### 12356 Ejection grip error

During routine processing, the MZ2 is driven to perform ejection grip, but the SZ3 does not transition to CLOSE. Retries (two times or more) are performed, but error results.

### 12357 No-load running error

During bootup and routine processing, the MZ2 is driven to perform no-load running, but the SZ3 does not transition to OPEN. Retries (two times or more) are performed, but error results.

### 14347 Driven shaft grip error

During bootup and routine processing, the MZ2 is driven to grip the driven shaft, but the SZ3 does not transition to CLOSE, so that a retry (within one time) is performed.

### 14349 Driven shaft grip release error

During bootup, the MZ2 is driven to release the driven shaft grip, but the SZ3 does not transition to OPEN, so that a retry (within one time) is performed.

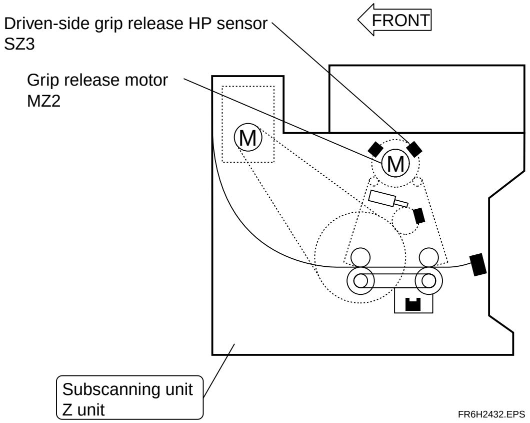
### 14356 Ejection grip error

During bootup and routine processing, the MZ2 is driven to perform ejection grip, but the SZ3 does not transition to CLOSE, so that a retry (within one time) is performed.

### 14357 No-load running error

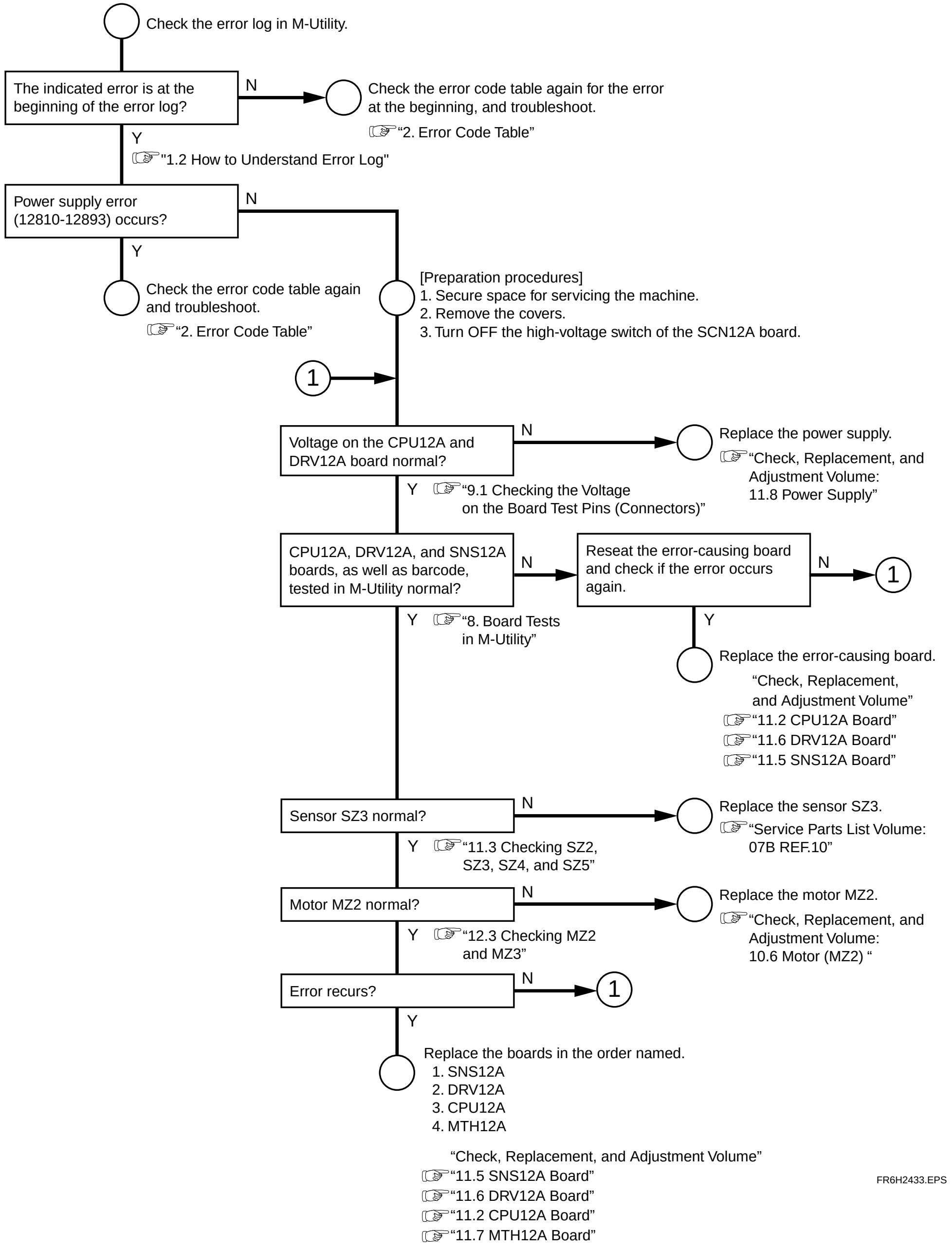
During bootup and routine processing, the MZ2 is driven to perform no-load running, but the SZ3 does not transition to OPEN, so that a retry (within one time) is performed.

## ■ I/O Locations


FRONT
Driven-side grip release HP sensor
SZ3
Grip release motor
MZ2
M
M
Subscanning unit
Z unit

FR6H2432.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensor SZ3 normal?
N
Replace the sensor SZ3.
☞"Service Parts List Volume: 07B REF.10"
Y
☞"11.3 Checking SZ2, SZ3, SZ4, and SZ5"
Motor MZ2 normal?
N
Replace the motor MZ2.
☞"Check, Replacement, and Adjustment Volume: 10.6 Motor (MZ2) "
Y
☞"12.3 Checking MZ2 and MZ3"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2433.EPS

# 10370, 10371

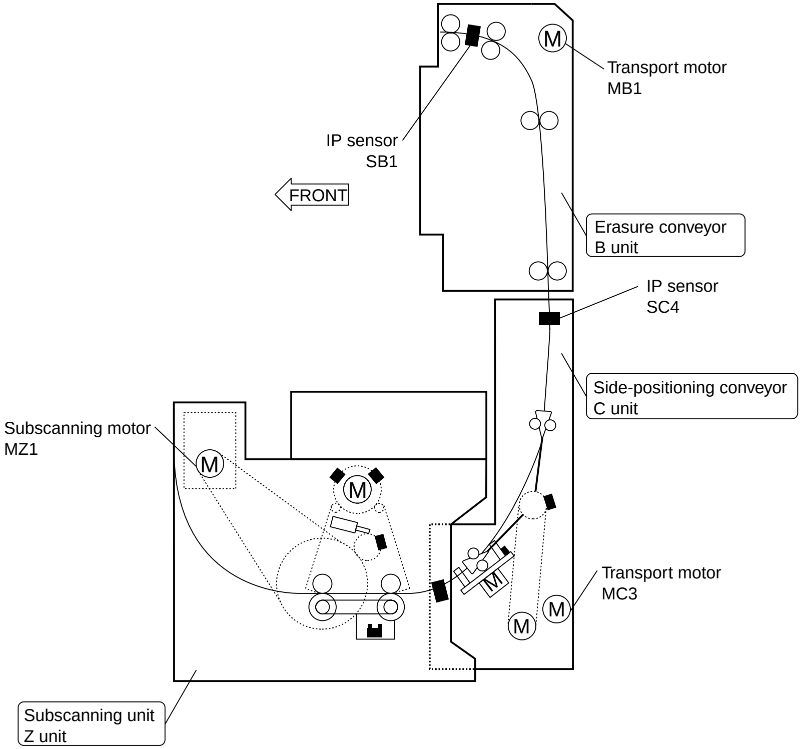
## 10370 Load positioning error

During routine processing, the MB1 is driven (counterclockwise) to perform load conveyance, but the SB1 does not transition to OPEN within the specified period of time.

## 10371 Recovery load positioning error

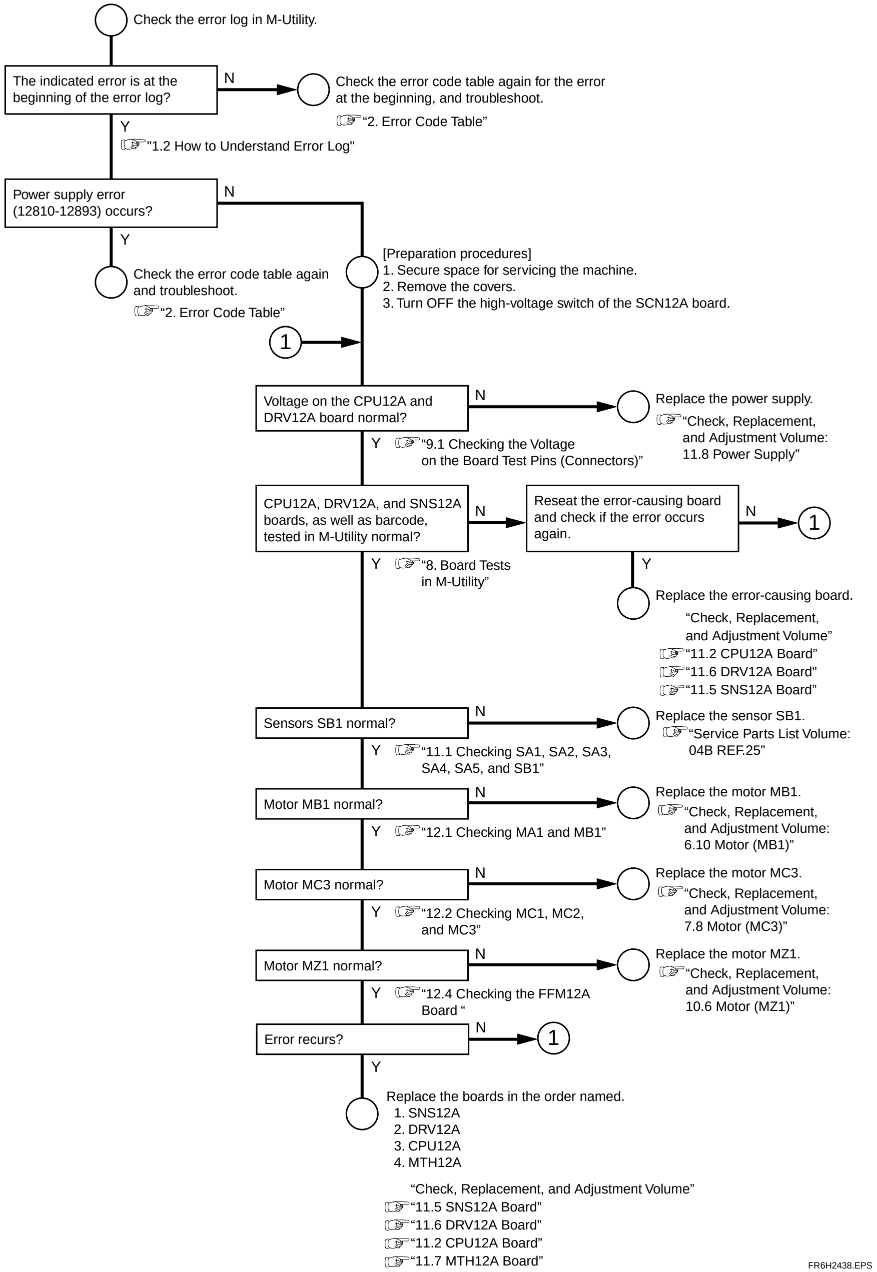
During error handling, the MB1, MC1, and MZ1 are driven (counterclockwise) for load conveyance after the IP leading edge is detected by the SB1, but the SB1 does not transition to OPEN within the specified period of time (20 sec).

## ■ I/O Locations



FR6H2212.EPS

## ■ Analysis Flow



Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

①

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.
- N: ①
- Y: Replace the error-causing board. "Check, Replacement, and Adjustment Volume" ☞"11.2 CPU12A Board" ☞"11.6 DRV12A Board" ☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensors SB1 normal?

N: Replace the sensor SB1. ☞"Service Parts List Volume: 04B REF.25"

Y: ☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"

Motor MB1 normal?

N: Replace the motor MB1. ☞"Check, Replacement, and Adjustment Volume: 6.10 Motor (MB1)"

Y: ☞"12.1 Checking MA1 and MB1"

Motor MC3 normal?

N: Replace the motor MC3. ☞"Check, Replacement, and Adjustment Volume: 7.8 Motor (MC3)"

Y: ☞"12.2 Checking MC1, MC2, and MC3"

Motor MZ1 normal?

N: Replace the motor MZ1. ☞"Check, Replacement, and Adjustment Volume: 10.6 Motor (MZ1)"

Y: ☞"12.4 Checking the FFM12A Board "

Error recurs?

N: ①

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2438.EPS

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# 10390, 10391, 10392, 10393, 12390, 12391, 12392, 12393, 12394, 12395, 13391, 13392

### 10390 Dust removal operation error (1)

During bootup or U-Utility dust removal operation, the MZ3 is driven (clockwise), but the SZ5 does not transition to CLOSE within the specified period of time.

### 10391 Dust removal mechanism lock (1)

During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but a mechanism lock results.

Subsequently, the MZ3 is driven (clockwise), but the SZ5 does not transition from CLOSE to OPEN within the specified period of time.

### 10392 Dust removal mechanism lock (2)

During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but a mechanism lock results.

Subsequently, the MZ3 is driven (clockwise), but the SZ5 does not transition from OPEN to CLOSE within the specified period of time.

### 10393 Dust removal operation error (4)

During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to perform home positioning, but the SZ5 does not transition from CLOSE to OPEN within the specified period of time.

### 12390 Dust removal operation error (1)

During U-Utility dust removal operation, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE.

### 12391 Dust removal operation error (2)

During U-Utility dust removal operation, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition to OPEN after transitioning from OPEN to CLOSE.

### 12392 Dust removal operation error (3)

During U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE.

### 12393 Dust removal operation error (4)

During U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to perform dust removal operation, but the SZ5 does not transition to OPEN after transitioning from OPEN to CLOSE.

### 12394 Dust removal operation error (5)

During shutdown processing, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from OPEN to CLOSE.

### 12395 Dust removal operation in low speed

During bootup, the MZ3 is driven (clockwise) to perform dust removal operation, but the SZ5 does not transition from CLOSE to OPEN within the specified time (30 sec) in the low-speed operation mode (from the large actuator hole to the small hole).

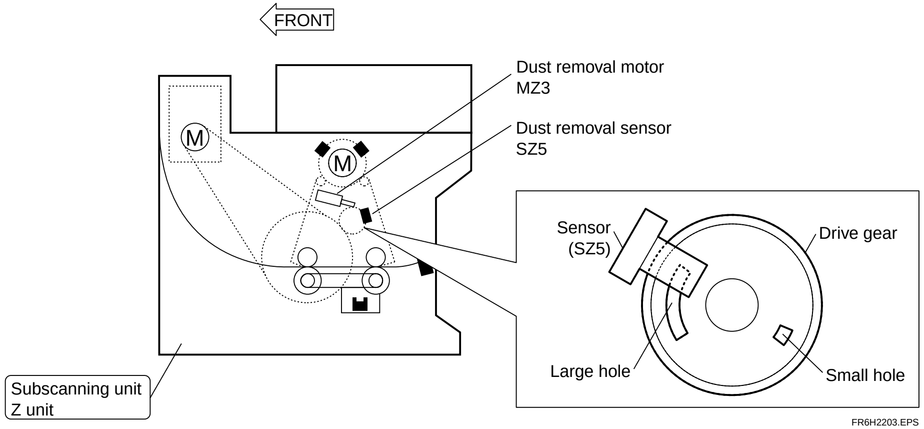
### 13391 Dust removal mechanism lock (1)

During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but the SZ5 does not transition from CLOSE to OPEN within the specified period of time.

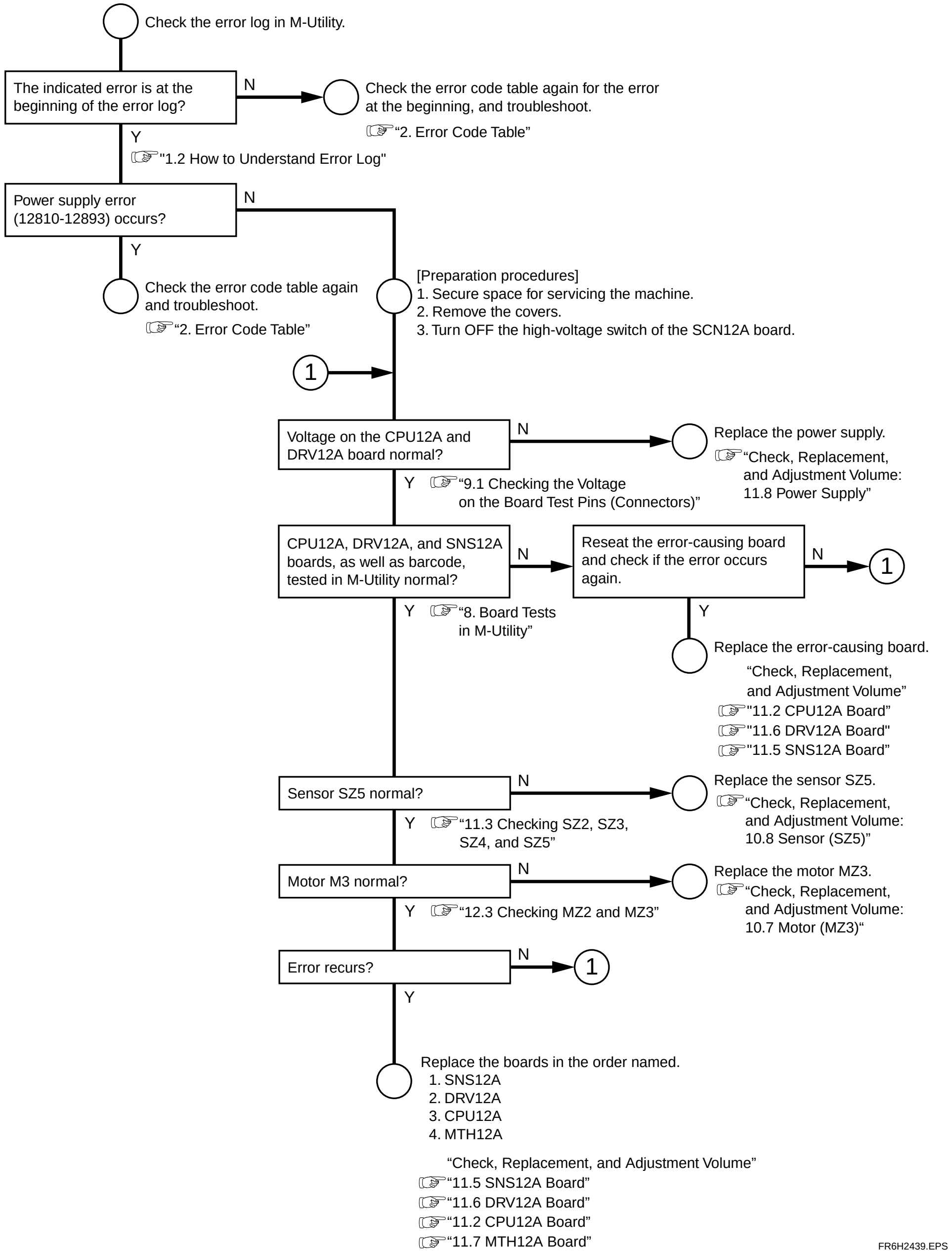
### 13392 Dust removal mechanism lock (2)

During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise) to measure the length of the hole (x2) of the drive gear, but the SZ5 does not transition from OPEN to CLOSE within the specified period of time.

## ■ I/O Locations



## ■ Analysis Flow


Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot.
☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

1

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.
N: 1
Y: Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensor SZ5 normal?

N: Replace the sensor SZ5.
☞"Check, Replacement, and Adjustment Volume: 10.8 Sensor (SZ5)"

Y: ☞"11.3 Checking SZ2, SZ3, SZ4, and SZ5"

Motor M3 normal?

N: Replace the motor MZ3.
☞"Check, Replacement, and Adjustment Volume: 10.7 Motor (MZ3)"

Y: ☞"12.3 Checking MZ2 and MZ3"

Error recurs?

N: 1

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

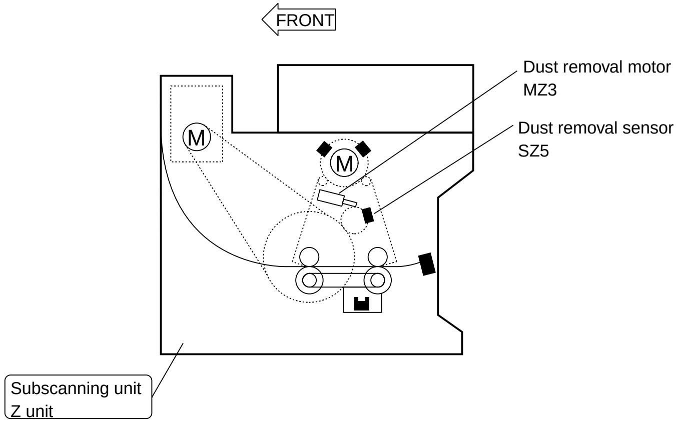
FR6H2439.EPS

# 10394

### 10394 Dust removal CCW drive error

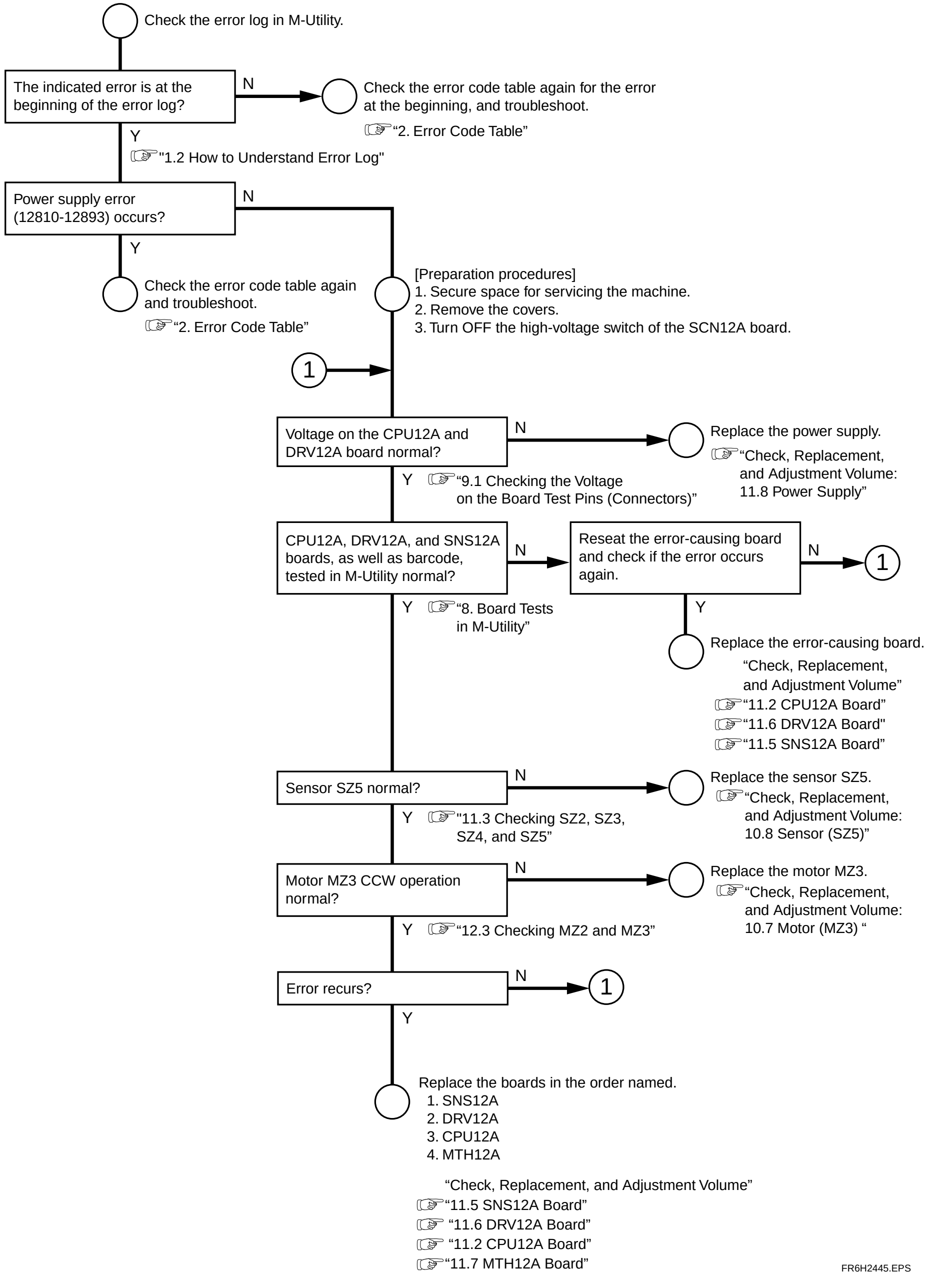
During bootup or U-Utility dust removal operation, the MZ3 is driven (counterclockwise), but two or more retries occur. However, driving in the clockwise direction is normal.

## ■ I/O Locations



FR6H2444.EPS

## ■ Analysis Flow



Check the error log in M-Utility.

The indicated error is at the beginning of the error log?
N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"
Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?
Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"
N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

Voltage on the CPU12A and DRV12A board normal?
N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N: Reseat the error-causing board and check if the error occurs again.
- N: 1
- Y: Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensor SZ5 normal?
N: Replace the sensor SZ5. ☞"Check, Replacement, and Adjustment Volume: 10.8 Sensor (SZ5)"
Y: ☞"11.3 Checking SZ2, SZ3, SZ4, and SZ5"

Motor MZ3 CCW operation normal?
N: Replace the motor MZ3. ☞"Check, Replacement, and Adjustment Volume: 10.7 Motor (MZ3) "
Y: ☞"12.3 Checking MZ2 and MZ3"

Error recurs?
N: 1
Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞ "11.6 DRV12A Board"
☞ "11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2445.EPS

# 11310, 11311, 14310, 14312

### 11310 Cassette setting error (1)

During routine processing, the SA2 transitions to CLOSE, and after the SolA1 is turned OFF, the SA3 does not transition to OPEN. Retries (six times or more) are performed, but error results.

### 11311 Cassette setting error (2)

During routine processing, the SA2 transitions to CLOSE, and after the SolA1 is turned ON, the cassette is moved, but the SA2 does not transition to CLOSE within the specified period of time. However, the SA1 is CLOSE.

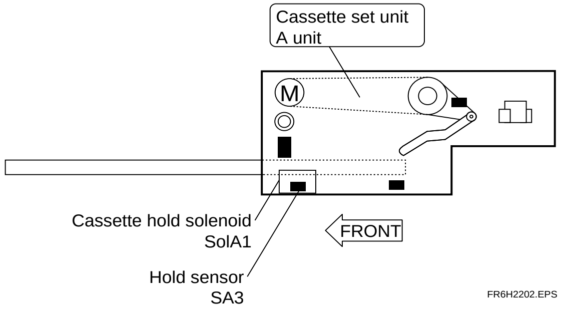
### 14310 Cassette hold failure retry

During routine processing, the SA2 transitions to CLOSE, and after the SolA1 is turned OFF, the SA3 transitions to CLOSE, so that retries (within five times) are performed.

### 14312 Cassette hold release failure retry

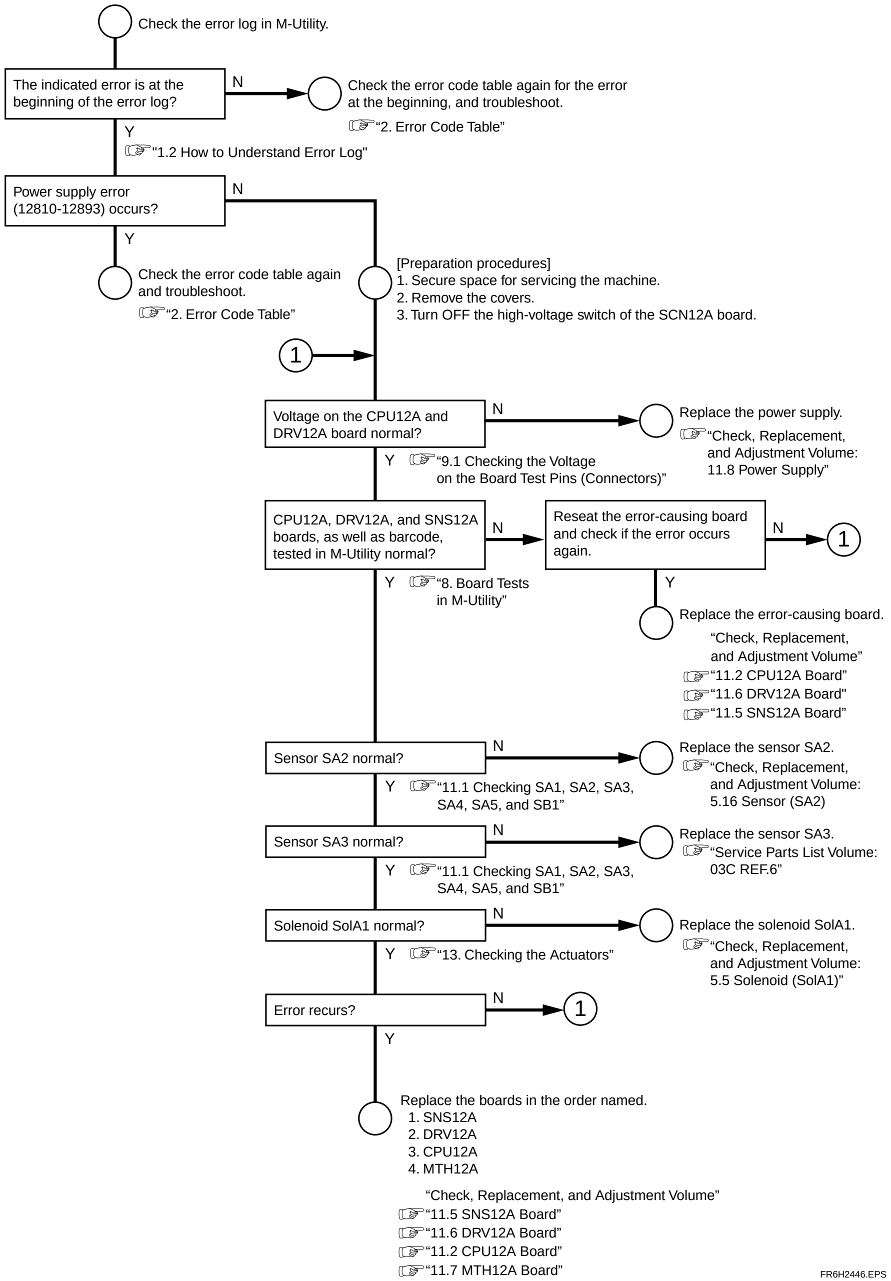
During routine processing, the SolA1 is turned ON to release the cassette hold, but the SA3 does not transition to CLOSE within the specified period of time, so that retries (within five times) are performed.

## ■ I/O Locations


Cassette set unit
A unit
M
Cassette hold solenoid
SolA1
FRONT
Hold sensor
SA3

FR6H2202.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Y
☞"8. Board Tests in M-Utility"
Sensor SA2 normal?
N
Replace the sensor SA2.
☞"Check, Replacement, and Adjustment Volume: 5.16 Sensor (SA2)
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Sensor SA3 normal?
N
Replace the sensor SA3.
☞"Service Parts List Volume: 03C REF.6"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Solenoid SolA1 normal?
N
Replace the solenoid SolA1.
☞"Check, Replacement, and Adjustment Volume: 5.5 Solenoid (SolA1)"
Y
☞"13. Checking the Actuators"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

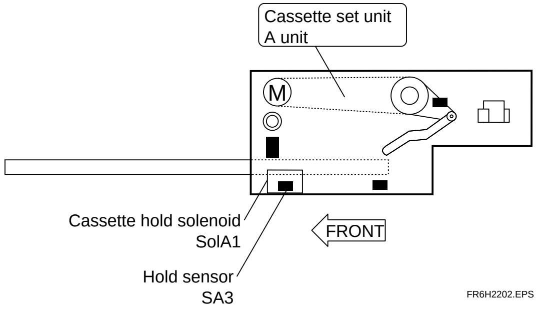
FR6H2446.EPS

# 11312

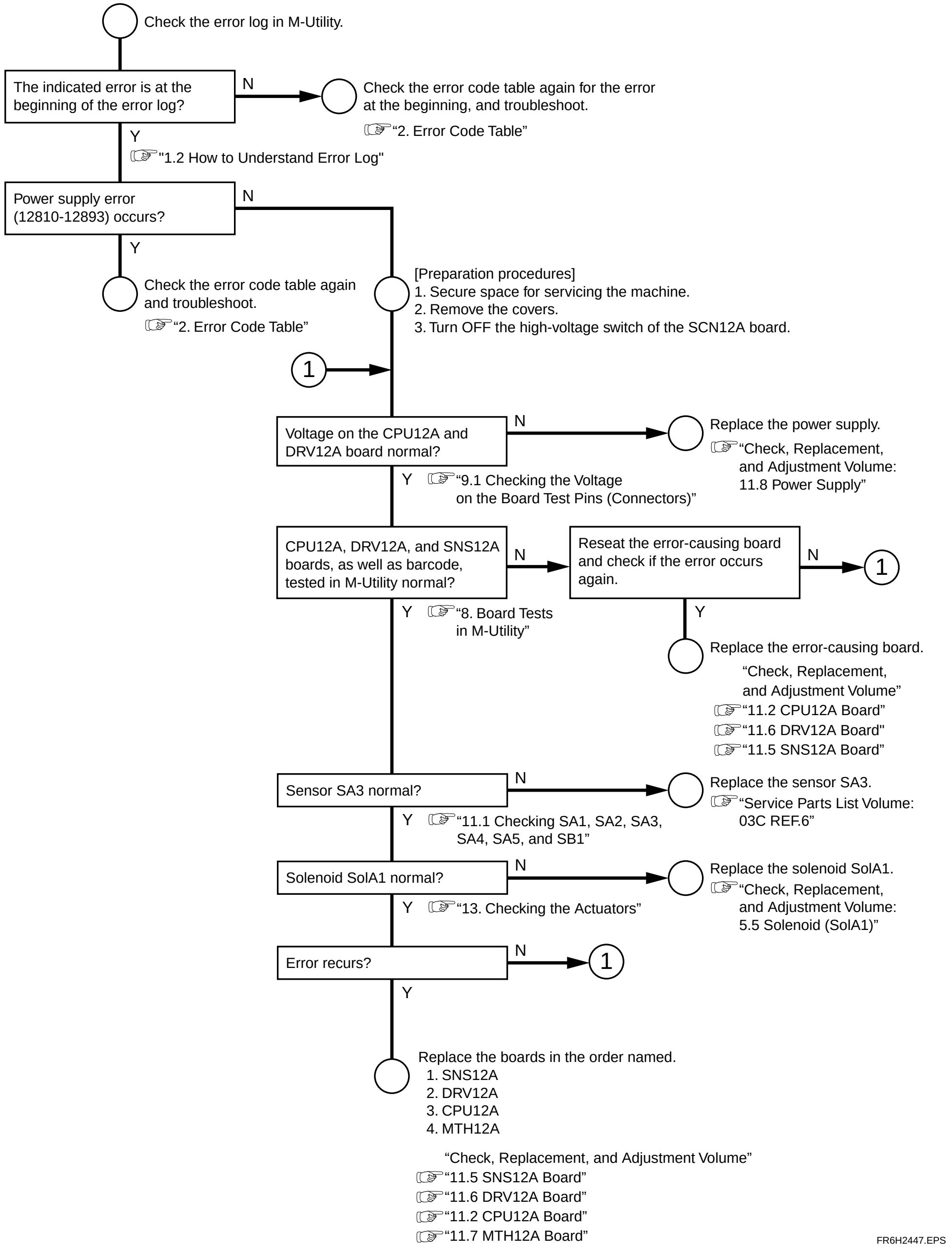
## 11312 Cassette hold release error

During routine processing, the SolA1 is turned ON to release the cassette hold, but the SA3 does not transition to CLOSE within the specified period of time. Retries (six times or more) are performed, but error results.

### ■ I/O Locations


Cassette set unit
A unit
M
Cassette hold solenoid
SolA1
FRONT
Hold sensor
SA3
FR6H2202.EPS

### ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Y
☞"8. Board Tests in M-Utility"
Sensor SA3 normal?
N
Replace the sensor SA3.
☞"Service Parts List Volume: 03C REF.6"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Solenoid SolA1 normal?
N
Replace the solenoid SolA1.
☞"Check, Replacement, and Adjustment Volume: 5.5 Solenoid (SolA1)"
Y
☞"13. Checking the Actuators"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2447.EPS

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# 11319, 11320, 11321, 11322, 14319, 14320, 14321, 14322

### 11319 Feed IP suction error

During routine processing, the MA1 is driven (counterclockwise) and the PA1 is turned ON to perform IP feed leak, but the SA5 does not transition to CLOSE within the specified period of time. Retries (four times or more) are performed, but error results.

### 11320 Feed IP drop

During bootup and routine processing, the MA1 and MB1 are driven (clockwise) to feed the IP from the cassette, but the SA5 transitions to OPEN at the time when the IP is griped by the rollers. Retries (two times or more) are performed, but error results.

### 11321 Feed IP grip error

During bootup and routine processing, the MB1 is driven (clockwise) to perform IP feed leak and conveyance, but the SB1 does not transition to CLOSE within the specified period of time. Retries (four times or more) are performed, but error results.

### 11322 Feed conveyance error

During routine processing, the MB1 and MC3 are driven (clockwise) to perform IP high-speed conveyance, but the SC3 transitions to OPEN. Retries (four times or more) are performed, but error results.

### 14319 Feed IP suction failure retry

During routine processing, the MA1 is driven (counterclockwise) and the PA1 is turned ON to perform IP feed leak, but the SA5 transitions to OPEN, so that retries (within three times) are performed.

### 14320 Feed IP drop retry

During bootup and routine processing, the MA1 and MB1 are driven (clockwise) to feed the IP from the cassette, but the SA5 transitions to OPEN at the time when the IP is gripped by the rollers, so that a retry (within one time) is performed.

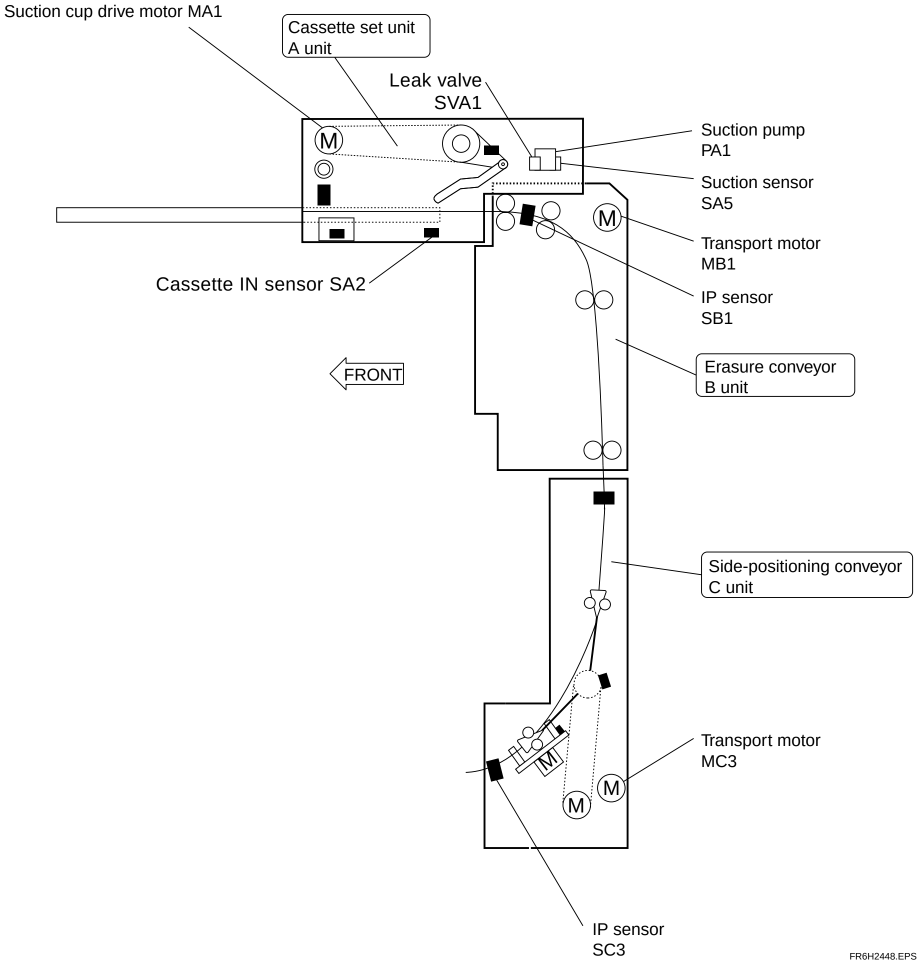
### 14321 Feed IP grip failure retry

During bootup and routine processing, the MB1 is driven (clockwise) to perform IP feed leak and conveyance, but the SB1 transitions to OPEN, so that retries (within three times) are performed.

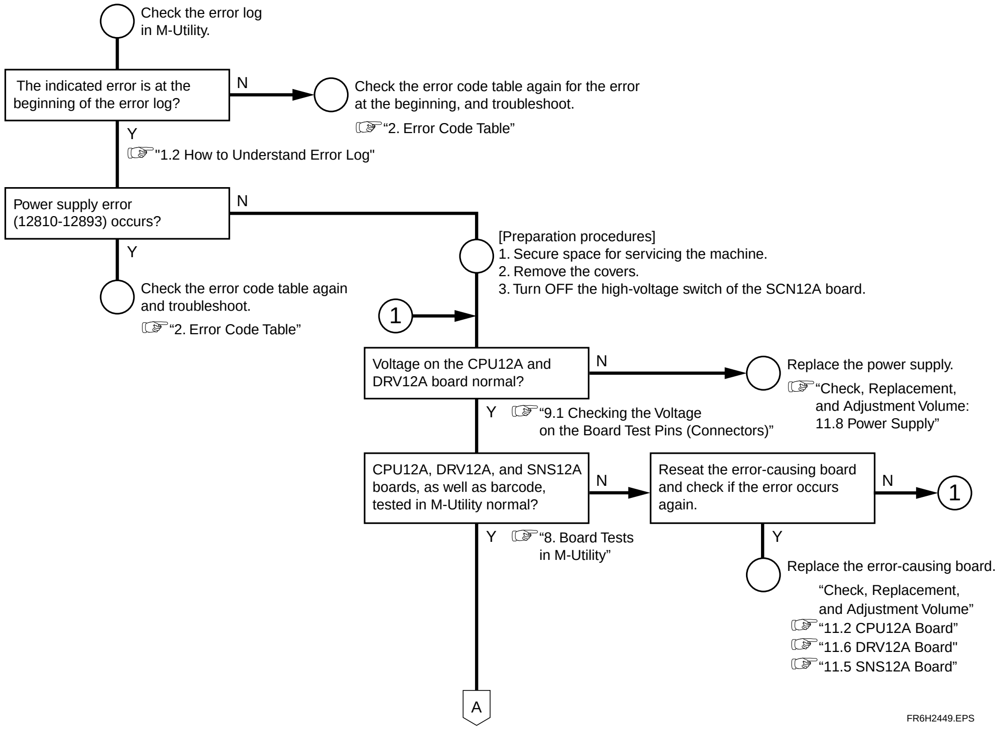
### 14322 Feed conveyance retry

During routine processing, the MB1 and MC3 are driven (clockwise) to perform IP high-speed conveyance, but the SC3 transitions to OPEN, so that retries (within three times) are performed.

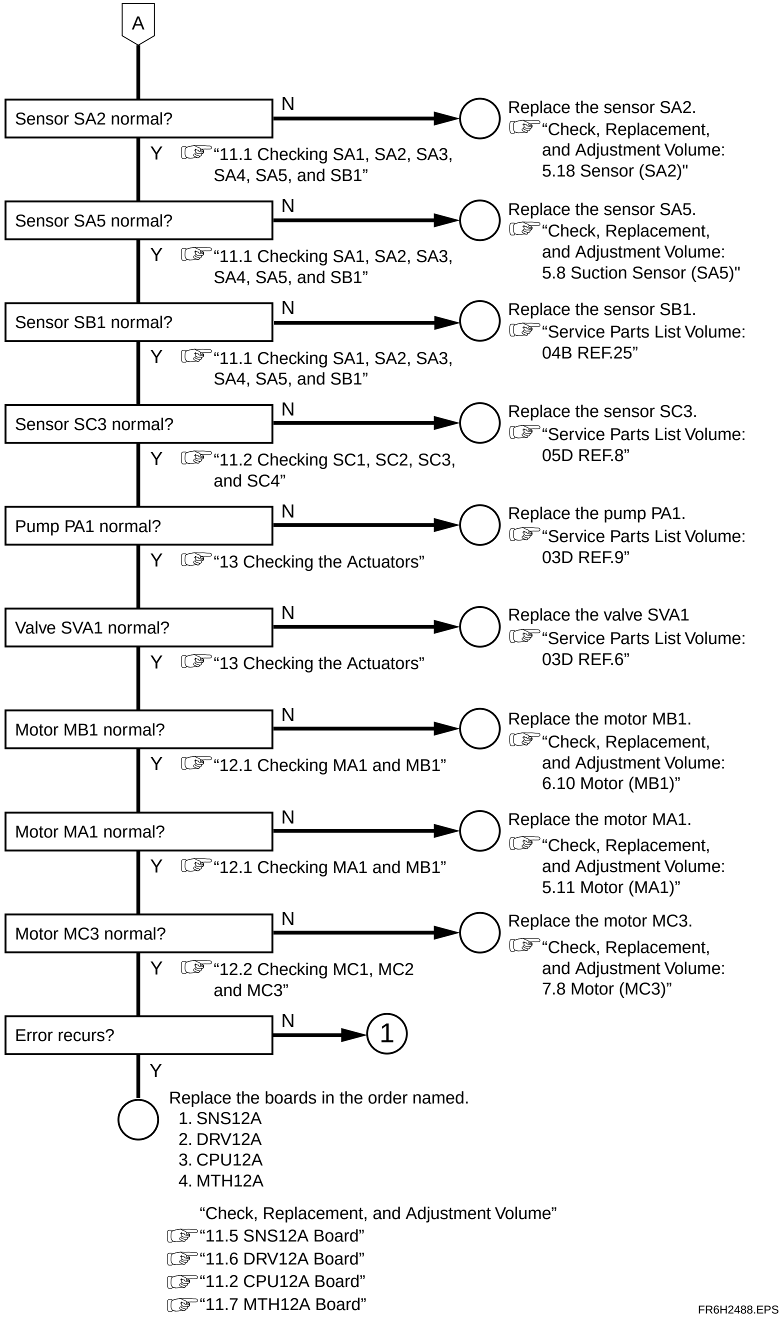
## ■ I/O Locations


Suction cup drive motor MA1
Cassette set unit
A unit
Leak valve
SVA1
Suction pump
PA1
Suction sensor
SA5
Transport motor
MB1
IP sensor
SB1
Cassette IN sensor SA2
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Transport motor
MC3
IP sensor
SC3
M
M
M
M
M
FR6H2448.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
A

FR6H2449.EPS


A
Sensor SA2 normal?
N
Replace the sensor SA2.
☞"Check, Replacement, and Adjustment Volume: 5.18 Sensor (SA2)"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Sensor SA5 normal?
N
Replace the sensor SA5.
☞"Check, Replacement, and Adjustment Volume: 5.8 Suction Sensor (SA5)"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Sensor SB1 normal?
N
Replace the sensor SB1.
☞"Service Parts List Volume: 04B REF.25"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Sensor SC3 normal?
N
Replace the sensor SC3.
☞"Service Parts List Volume: 05D REF.8"
Y
☞"11.2 Checking SC1, SC2, SC3, and SC4"
Pump PA1 normal?
N
Replace the pump PA1.
☞"Service Parts List Volume: 03D REF.9"
Y
☞"13 Checking the Actuators"
Valve SVA1 normal?
N
Replace the valve SVA1
☞"Service Parts List Volume: 03D REF.6"
Y
☞"13 Checking the Actuators"
Motor MB1 normal?
N
Replace the motor MB1.
☞"Check, Replacement, and Adjustment Volume: 6.10 Motor (MB1)"
Y
☞"12.1 Checking MA1 and MB1"
Motor MA1 normal?
N
Replace the motor MA1.
☞"Check, Replacement, and Adjustment Volume: 5.11 Motor (MA1)"
Y
☞"12.1 Checking MA1 and MB1"
Motor MC3 normal?
N
Replace the motor MC3.
☞"Check, Replacement, and Adjustment Volume: 7.8 Motor (MC3)"
Y
☞"12.2 Checking MC1, MC2 and MC3"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2488.EPS

# 10360, 10361, 11323, 14323

### 10360 After-erasure conveyance error

During routine processing, the SB1 cannot detect the IP leading edge for after-erasure conveyance (the MB1 is driven counterclockwise). The MB1 is driven (counterclockwise) to perform load conveyance, but the SB1 does not transition to CLOSE within the specified period of time (20 sec).

### 10361 After-recovery-erasure conveyance error

During error handling, the SB1 cannot detect the IP leading edge. The MB1, MC1, and MZ1 are driven (counterclockwise) for load conveyance, but the SB1 does not transition to CLOSE within the specified period of time (20 sec). (The SB1 is in OPEN status.)

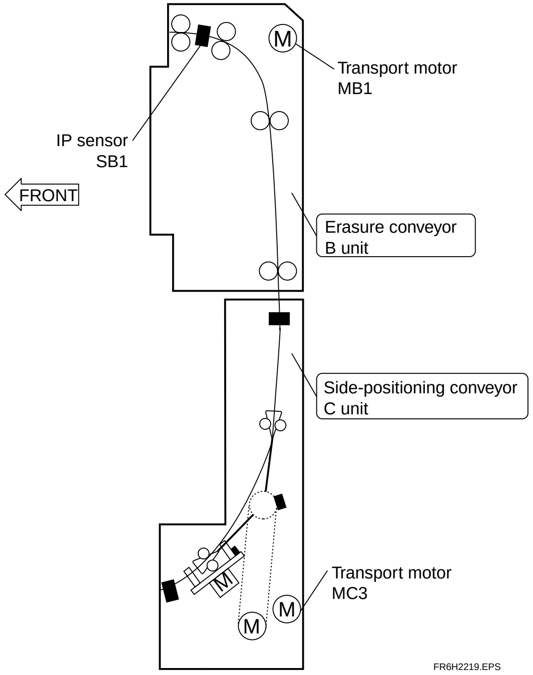
### 11323 Length-measurement conveyance error

During routine processing, the MB1 and MC3 are driven (clockwise) to determine the IP size, but the SB1 transitions to OPEN. Retries (four times or more) are performed, but error results.

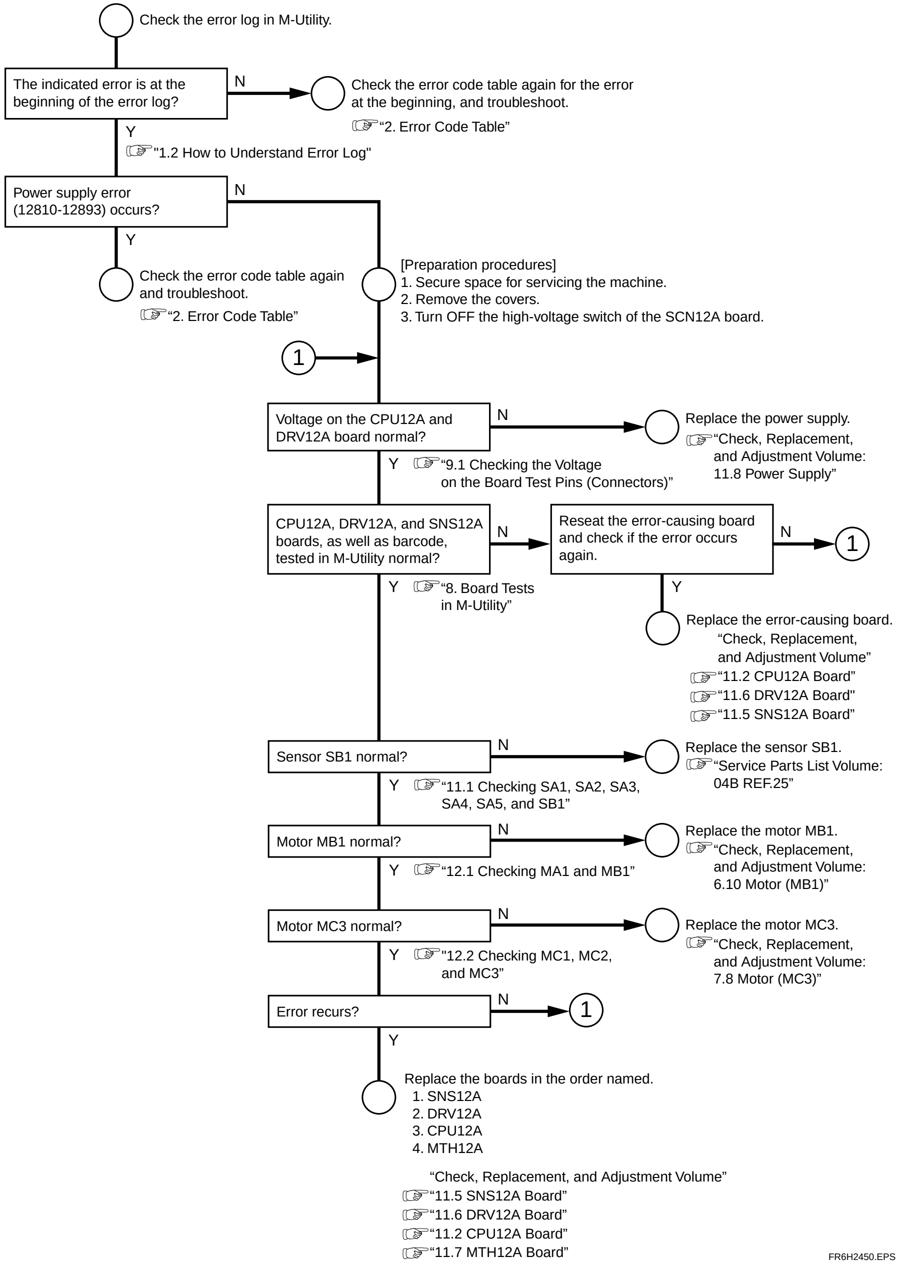
### 14323 Length-measurement conveyance retry

During routine processing, the MB1 and MC3 are driven (clockwise) to determine the IP size, but the SB1 transitions to OPEN, so that retries (within three times) are performed.

## ■ I/O Locations


M
Transport motor
MB1
IP sensor
SB1
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
M
M
M
Transport motor
MC3
FR6H2219.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensor SB1 normal?
N
Replace the sensor SB1.
☞"Service Parts List Volume: 04B REF.25"
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Motor MB1 normal?
N
Replace the motor MB1.
☞"Check, Replacement, and Adjustment Volume: 6.10 Motor (MB1)"
Y
☞"12.1 Checking MA1 and MB1"
Motor MC3 normal?
N
Replace the motor MC3.
☞"Check, Replacement, and Adjustment Volume: 7.8 Motor (MC3)"
Y
☞"12.2 Checking MC1, MC2, and MC3"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2450.EPS

# 11325, 12325

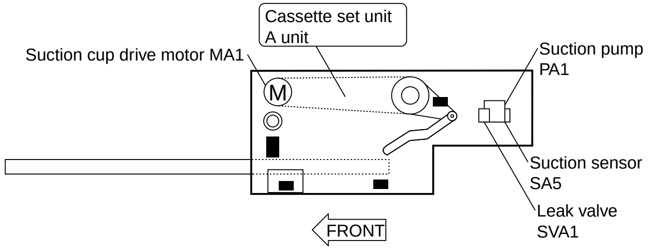
### 11325 Load leak error

During routine processing, the SVA1 is turned ON and the PA1 is turned OFF to leak the IP after loading it into the cassette, but the SA5 does not transition to OPEN.

### 12325 Feed leak error

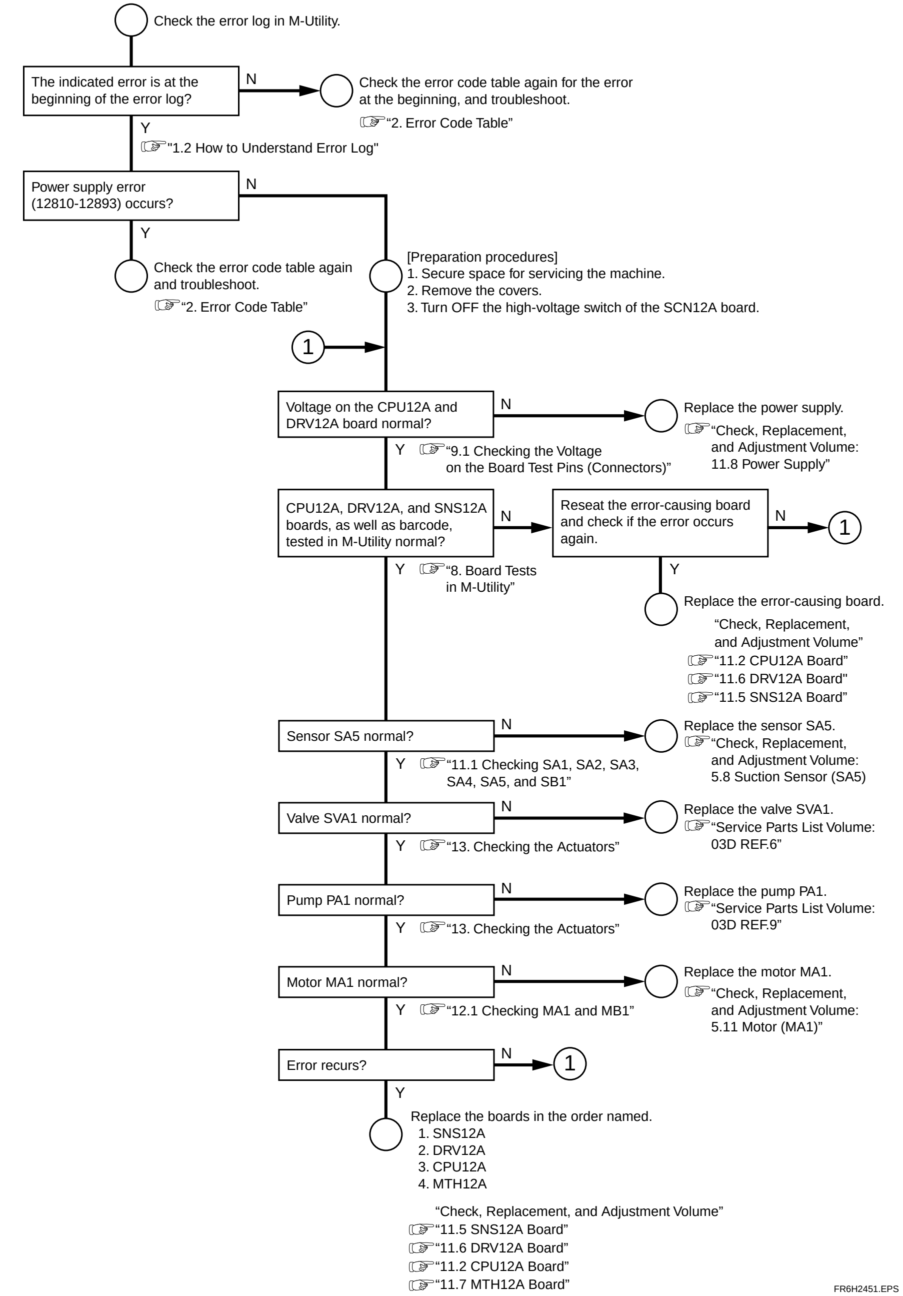
During bootup and routine processing, the SVA1 is turned ON and the PA1 is turned OFF to perform IP feed leak, but the SA5 does not transition to OPEN.

## ■ I/O Locations



FR6H2216.EPS

## ■ Analysis Flow


Check the error log in M-Utility.

The indicated error is at the beginning of the error log?
N → Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?
Y → Check the error code table again and troubleshoot.
☞"2. Error Code Table"
N → [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

① →

Voltage on the CPU12A and DRV12A board normal?
N → Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N → Reseat the error-causing board and check if the error occurs again.
N → ①
Y → Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Y ☞"8. Board Tests in M-Utility"

Sensor SA5 normal?
N → Replace the sensor SA5.
☞"Check, Replacement, and Adjustment Volume: 5.8 Suction Sensor (SA5)
Y ☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"

Valve SVA1 normal?
N → Replace the valve SVA1.
☞"Service Parts List Volume: 03D REF.6"
Y ☞"13. Checking the Actuators"

Pump PA1 normal?
N → Replace the pump PA1.
☞"Service Parts List Volume: 03D REF.9"
Y ☞"13. Checking the Actuators"

Motor MA1 normal?
N → Replace the motor MA1.
☞"Check, Replacement, and Adjustment Volume: 5.11 Motor (MA1)"
Y ☞"12.1 Checking MA1 and MB1"

Error recurs?
N → ①
Y → Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2451.EPS

# 11342, 11343, 11344

### 11342 Reading IP leading-edge detection error

During routine processing, the MZ1 is driven (clockwise) to perform read processing, but the SZ1 transitions to OPEN. Subsequently, the laser is turned OFF, and when IP conveyance is performed to isolate the error, the SC3 transitions to OPEN.

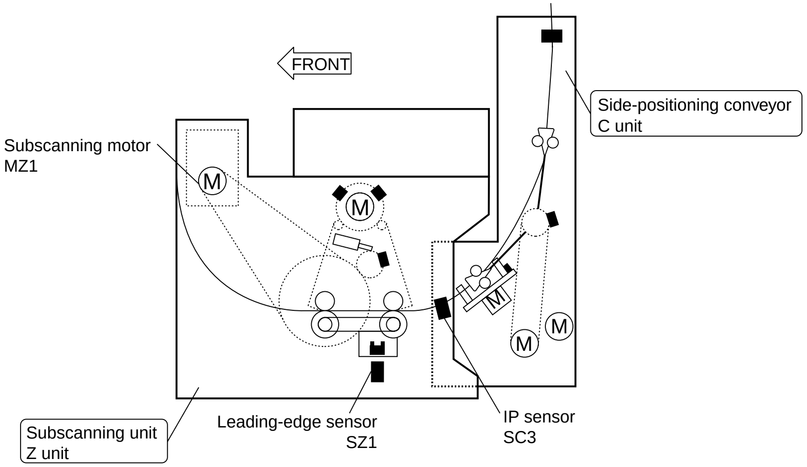
### 11343 Subscanning conveyance error (1)

During routine processing, the MZ1 is driven (clockwise) to perform read processing, but the SZ1 transitions to OPEN. Subsequently, the laser is turned OFF, and when IP conveyance is performed to isolate the error, the SC3 transitions to CLOSE.

### 11344 Subscanning conveyance error (2)

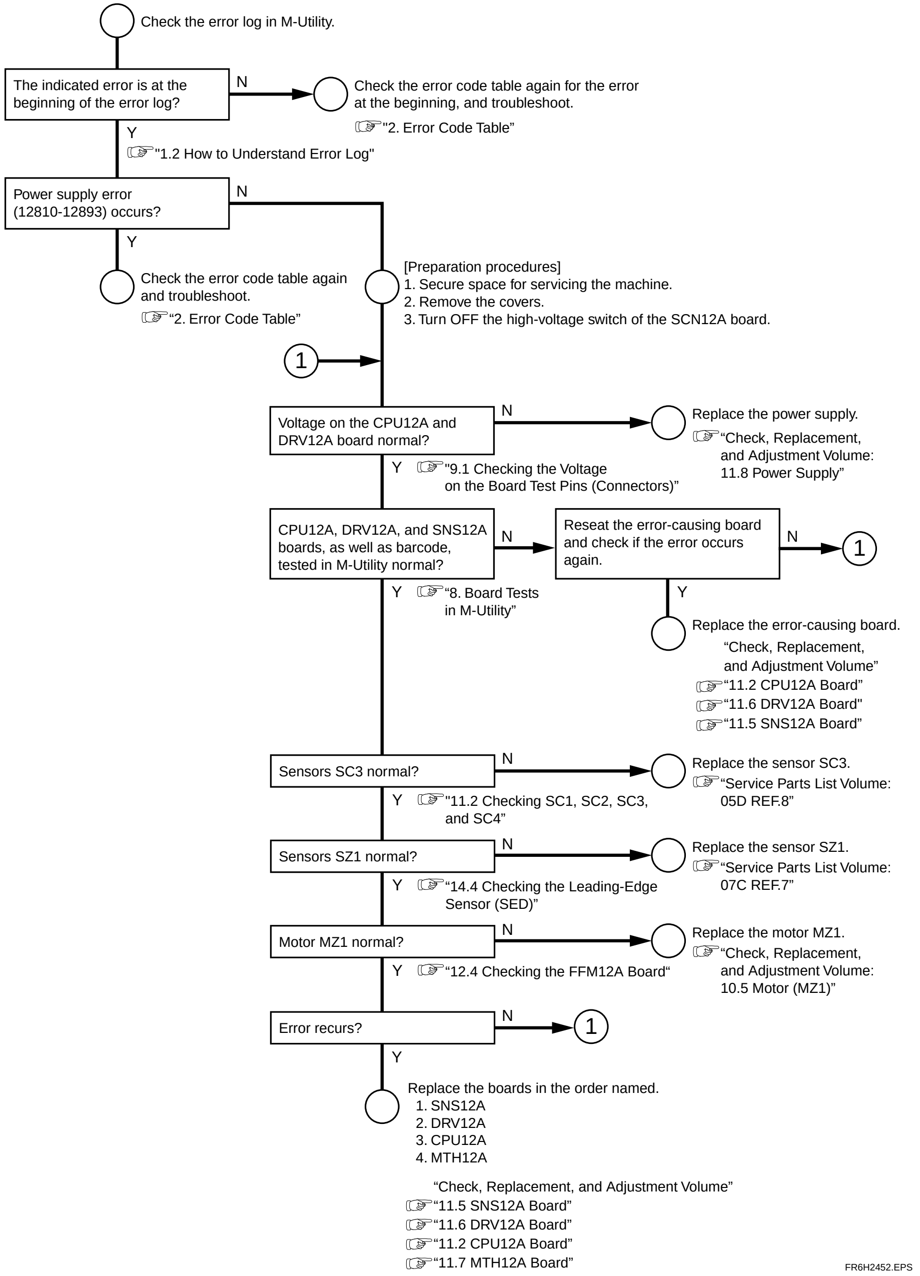
During routine processing, the SC3 does not transition to OPEN within the specified period of time before the end-of-image interrupt after reading is initiated.

## ■ I/O Locations


FRONT
Side-positioning conveyor C unit
Subscanning motor MZ1
M
M
M
M
M
Subscanning unit Z unit
Leading-edge sensor SZ1
IP sensor SC3

FR6H2220.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensors SC3 normal?
N
Replace the sensor SC3.
☞"Service Parts List Volume: 05D REF.8"
Y
☞"11.2 Checking SC1, SC2, SC3, and SC4"
Sensors SZ1 normal?
N
Replace the sensor SZ1.
☞"Service Parts List Volume: 07C REF.7"
Y
☞"14.4 Checking the Leading-Edge Sensor (SED)"
Motor MZ1 normal?
N
Replace the motor MZ1.
☞"Check, Replacement, and Adjustment Volume: 10.5 Motor (MZ1)"
Y
☞"12.4 Checking the FFM12A Board"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

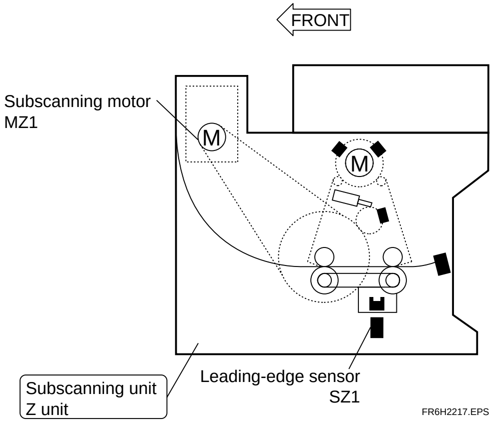
FR6H2452.EPS

# 11350

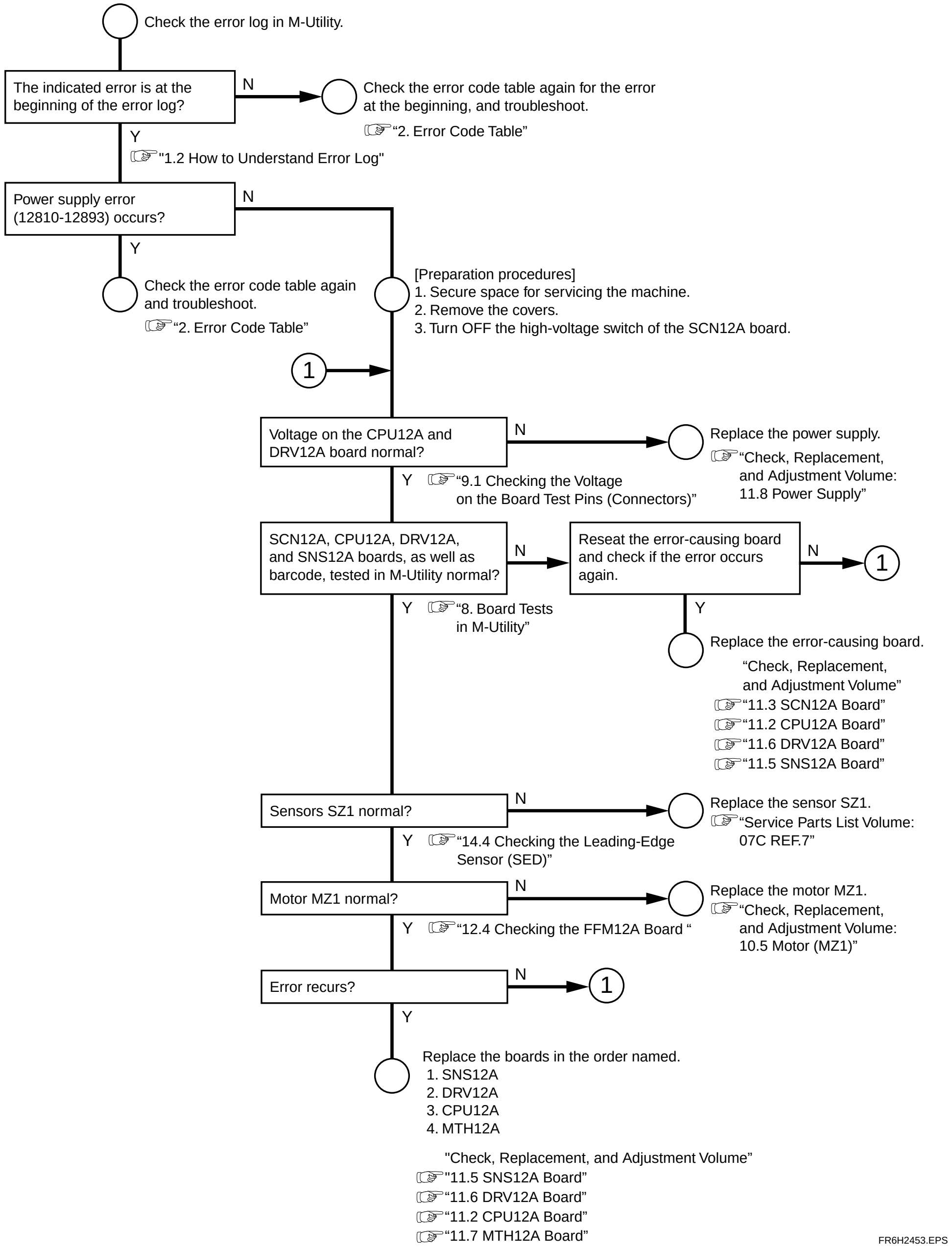
### 11350 End-of-image timeout

During routine processing, the end-of-image interrupt from the scanner board is not processed within the specified period of time after reading is initiated.

## ■ I/O Locations



## ■ Analysis Flow


Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

SCN12A, CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.

N: 1

Y: Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensors SZ1 normal?

N: Replace the sensor SZ1. ☞"Service Parts List Volume: 07C REF.7"

Y: ☞"14.4 Checking the Leading-Edge Sensor (SED)"

Motor MZ1 normal?

N: Replace the motor MZ1. ☞"Check, Replacement, and Adjustment Volume: 10.5 Motor (MZ1)"

Y: ☞"12.4 Checking the FFM12A Board "

Error recurs?

N: 1

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

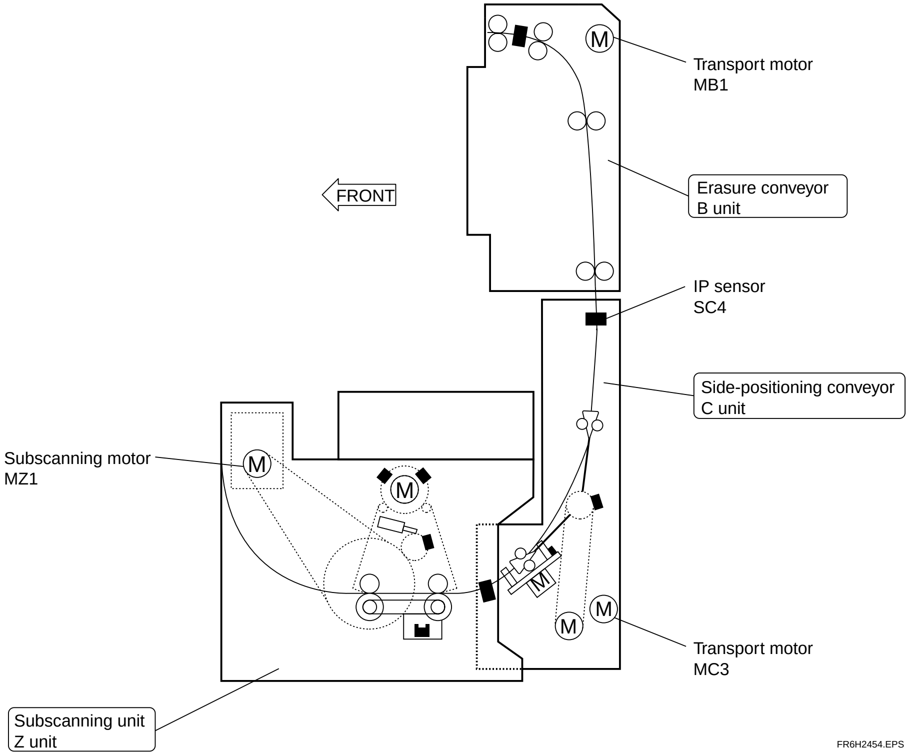
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

# 11362

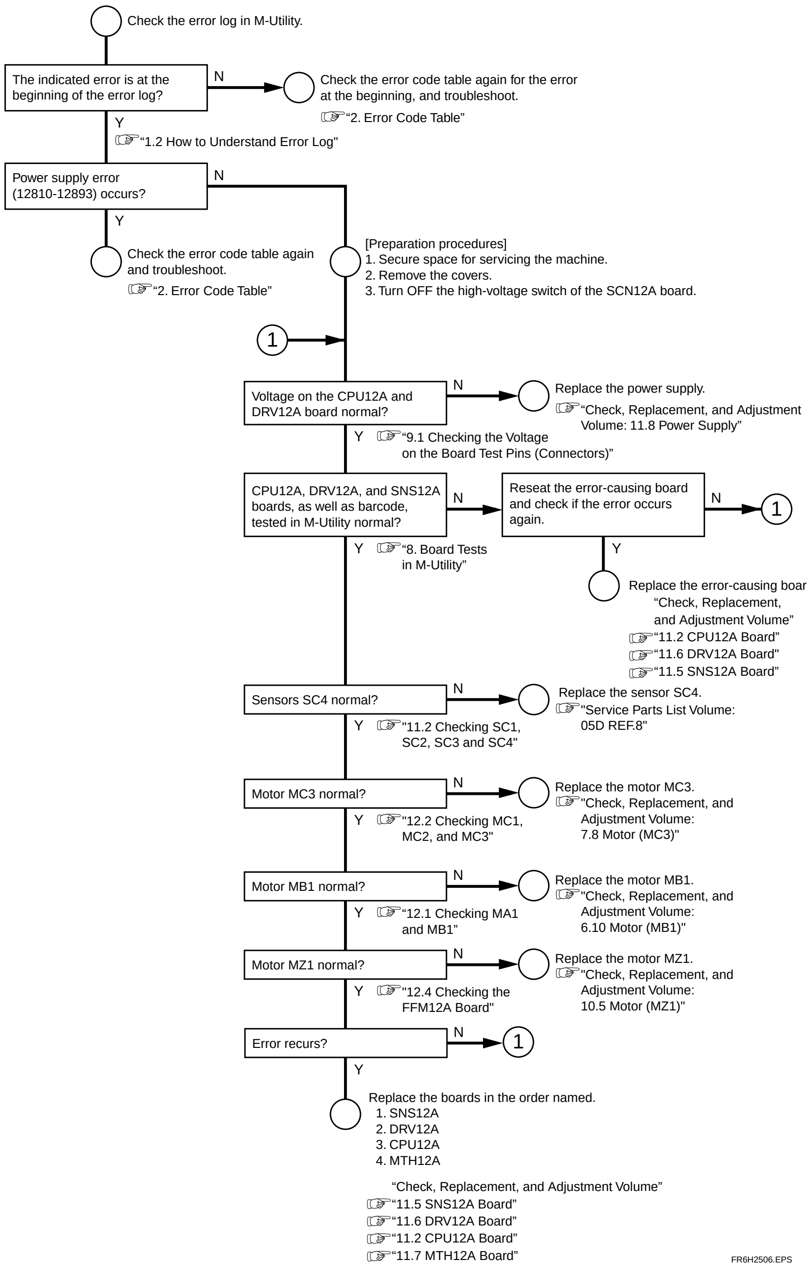
## 11362 After-reading conveyance error

During routine processing, the MZ1, MC3, and MB1 are driven (counterclockwise) to convey the IP to the erasure unit after reading is completed, but the SC4 does not transition to CLOSE within the specified period of time.

### ■ I/O Locations


FRONT
Transport motor
MB1
Erasure conveyor
B unit
IP sensor
SC4
Side-positioning conveyor
C unit
Subscanning motor
MZ1
Transport motor
MC3
Subscanning unit
Z unit
M
FR6H2454.EPS

### ■ Analysis Flow

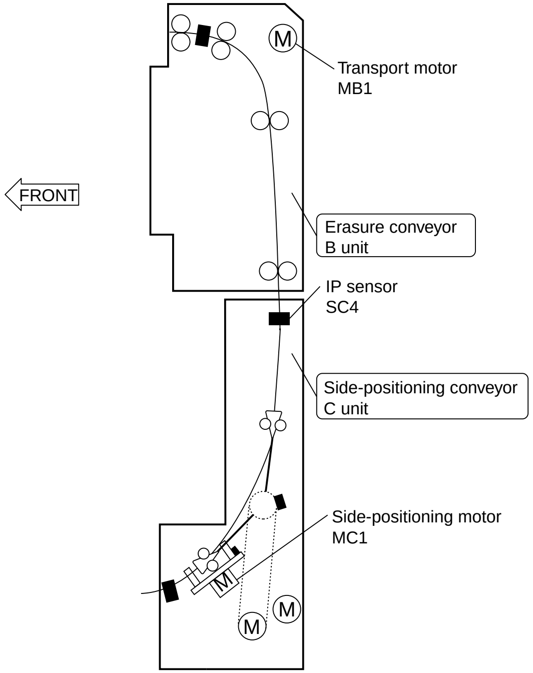

Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Y
☞"8. Board Tests in M-Utility"
Sensors SC4 normal?
N
Replace the sensor SC4.
☞"Service Parts List Volume: 05D REF.8"
Y
☞"11.2 Checking SC1, SC2, SC3 and SC4"
Motor MC3 normal?
N
Replace the motor MC3.
☞"Check, Replacement, and Adjustment Volume: 7.8 Motor (MC3)"
Y
☞"12.2 Checking MC1, MC2, and MC3"
Motor MB1 normal?
N
Replace the motor MB1.
☞"Check, Replacement, and Adjustment Volume: 6.10 Motor (MB1)"
Y
☞"12.1 Checking MA1 and MB1"
Motor MZ1 normal?
N
Replace the motor MZ1.
☞"Check, Replacement, and Adjustment Volume: 10.5 Motor (MZ1)"
Y
☞"12.4 Checking the FFM12A Board"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2506.EPS

# 11363

## 11363 Erasure conveyance error

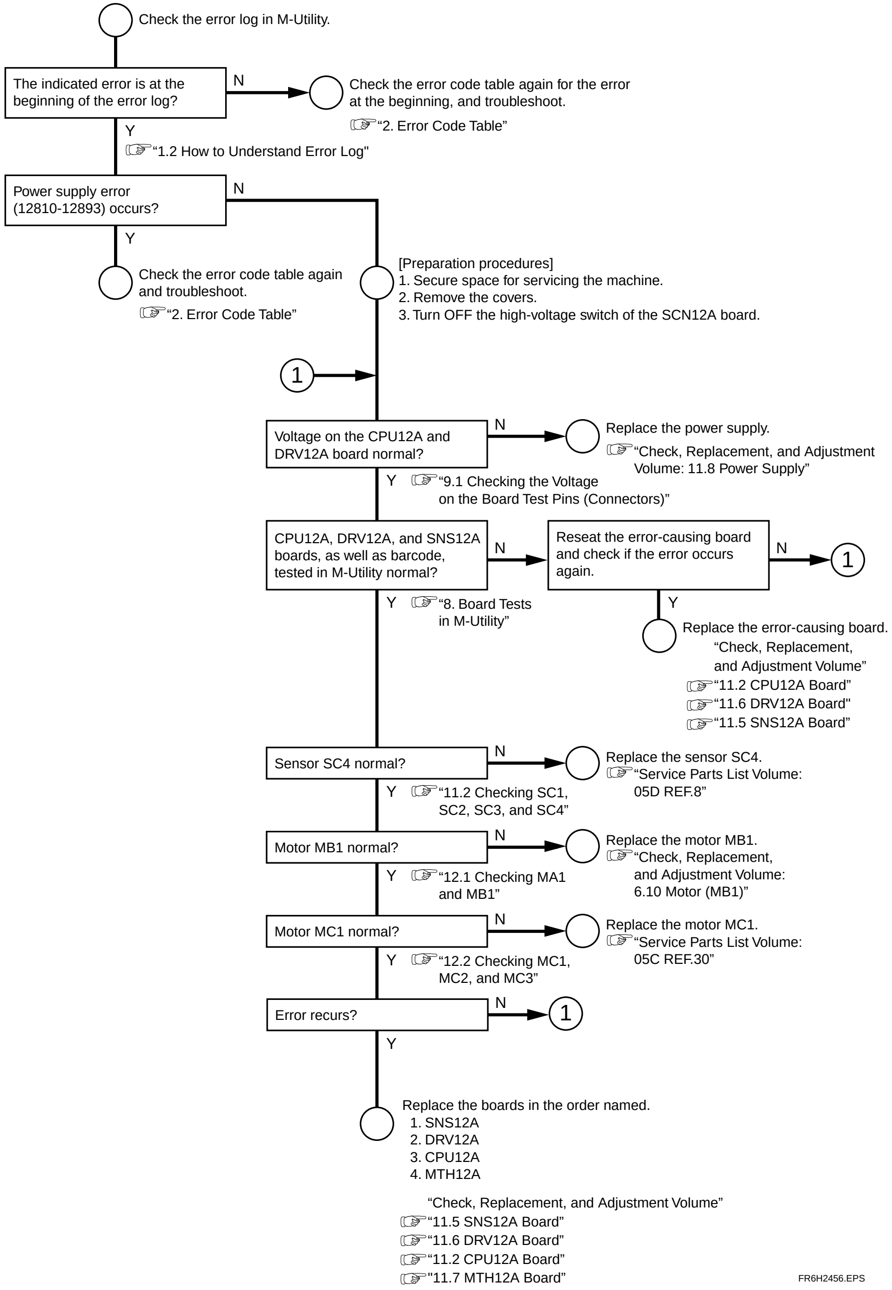
During routine processing, the MC3 and MB1 are driven (counterclockwise) to perform erasure conveyance of the IP after reading, but the SC4 does not transition to OPEN.

## ■ I/O Locations



FR6H2218.EPS

## ■ Analysis Flow



Check the error log in M-Utility.

The indicated error is at the beginning of the error log?
N: Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?
Y: Check the error code table again and troubleshoot.
☞"2. Error Code Table"
N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

1

Voltage on the CPU12A and DRV12A board normal?
N: Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N: Reseat the error-causing board and check if the error occurs again.
N: 1
Y: Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Y: ☞"8. Board Tests in M-Utility"

Sensor SC4 normal?
N: Replace the sensor SC4.
☞"Service Parts List Volume: 05D REF.8"
Y: ☞"11.2 Checking SC1, SC2, SC3, and SC4"

Motor MB1 normal?
N: Replace the motor MB1.
☞"Check, Replacement, and Adjustment Volume: 6.10 Motor (MB1)"
Y: ☞"12.1 Checking MA1 and MB1"

Motor MC1 normal?
N: Replace the motor MC1.
☞"Service Parts List Volume: 05C REF.30"
Y: ☞"12.2 Checking MC1, MC2, and MC3"

Error recurs?
N: 1
Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2456.EPS

# 11371, 11372, 11373, 14372, 14373

### 11371 Load IP drop

During bootup and routine processing, the MB1 is driven (counterclockwise) to reload the IP due to the load IP drop retry (14373) or load IP suction failure retry (14372), but the SB1 does not transition to OPEN within the specified period of time.

### 11372 Load IP suction error

During routine processing, the PA1 is turned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN within the specified period of time. Retries (four times or more) are performed, but error results.

### 11373 Load IP drop

During routine processing, the PA1 is turned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN at the time when the IP is released. Retries (four times or more) are performed, but error results.

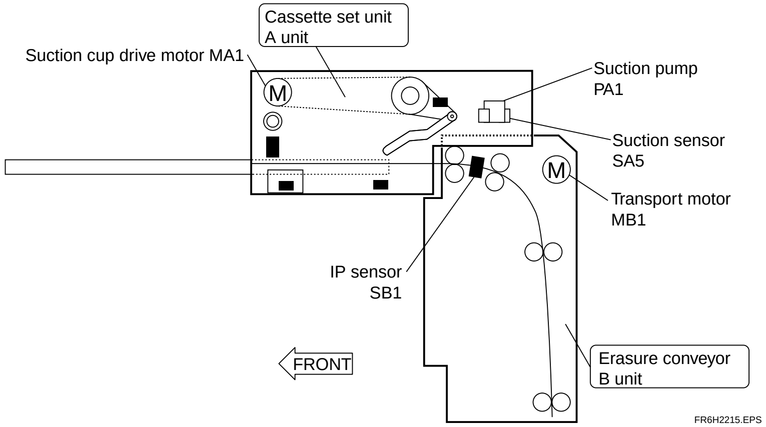
### 14372 Load IP suction failure retry

During routine processing, the PA1 is tuned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN within the specified period of time, so that retries (within three times) are performed.

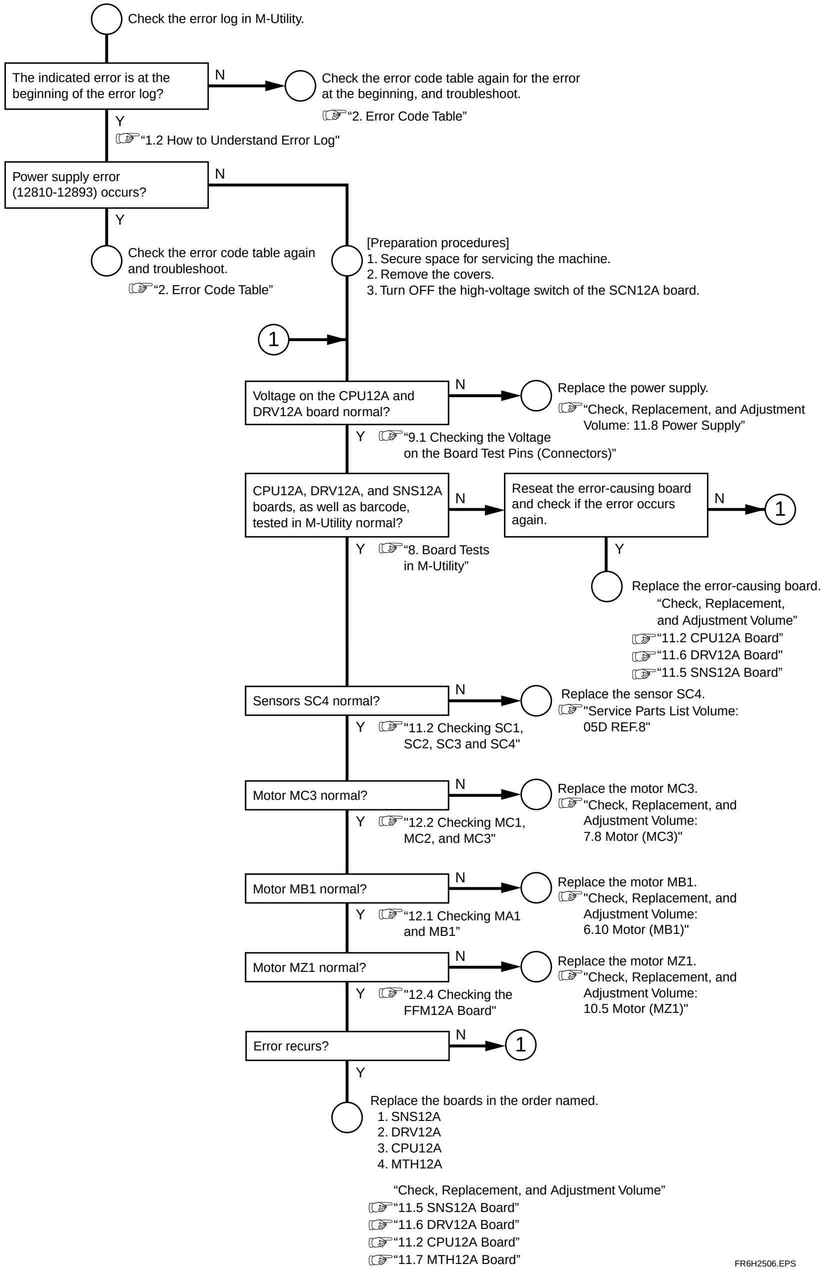
### 14373 Load IP drop retry

During routine processing, the PA1 is turned ON and the MA1 is driven (counterclockwise) to load the IP into the cassette, but the SA5 transitions to OPEN at the time when the IP is released, so that retries (within three times) are performed.

## ■ I/O Locations


Cassette set unit
A unit
Suction cup drive motor MA1
M
Suction pump
PA1
Suction sensor
SA5
M
Transport motor
MB1
IP sensor
SB1
FRONT
Erasure conveyor
B unit
FR6H2215.EPS

## ■ Analysis Flow

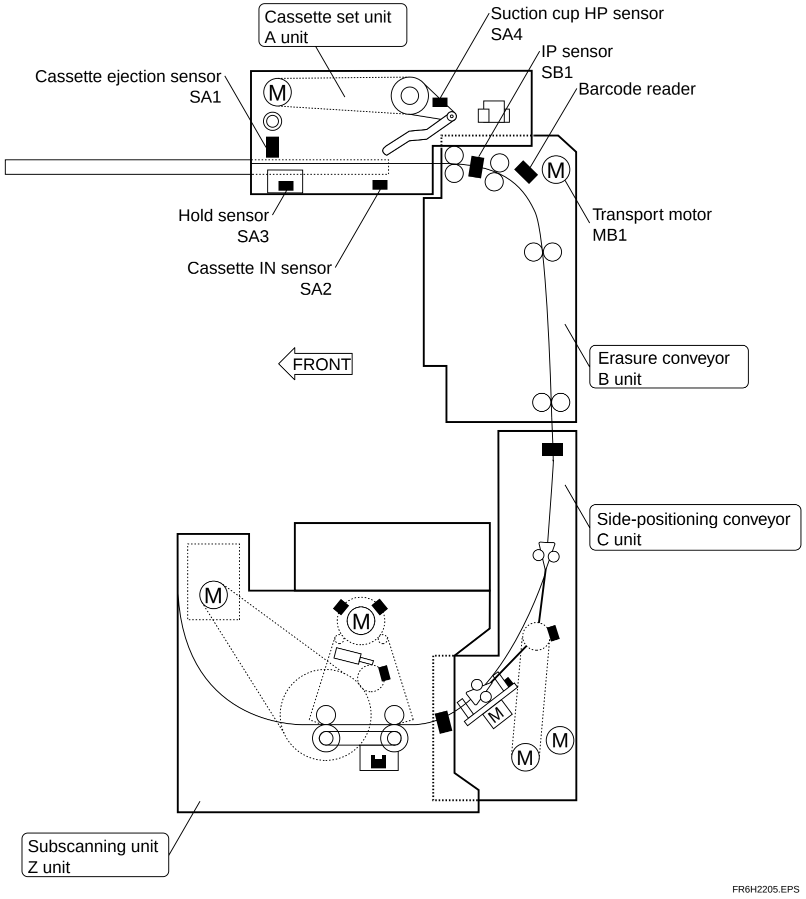

Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
"2. Error Code Table"
Y
"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
"11.2 CPU12A Board"
"11.6 DRV12A Board"
"11.5 SNS12A Board"
Sensors SC4 normal?
N
Replace the sensor SC4.
"Service Parts List Volume: 05D REF.8"
Y
"11.2 Checking SC1, SC2, SC3 and SC4"
Motor MC3 normal?
N
Replace the motor MC3.
"Check, Replacement, and Adjustment Volume: 7.8 Motor (MC3)"
Y
"12.2 Checking MC1, MC2, and MC3"
Motor MB1 normal?
N
Replace the motor MB1.
"Check, Replacement, and Adjustment Volume: 6.10 Motor (MB1)"
Y
"12.1 Checking MA1 and MB1"
Motor MZ1 normal?
N
Replace the motor MZ1.
"Check, Replacement, and Adjustment Volume: 10.5 Motor (MZ1)"
Y
"12.4 Checking the FFM12A Board"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
"11.5 SNS12A Board"
"11.6 DRV12A Board"
"11.2 CPU12A Board"
"11.7 MTH12A Board"
FR6H2506.EPS

# 11380

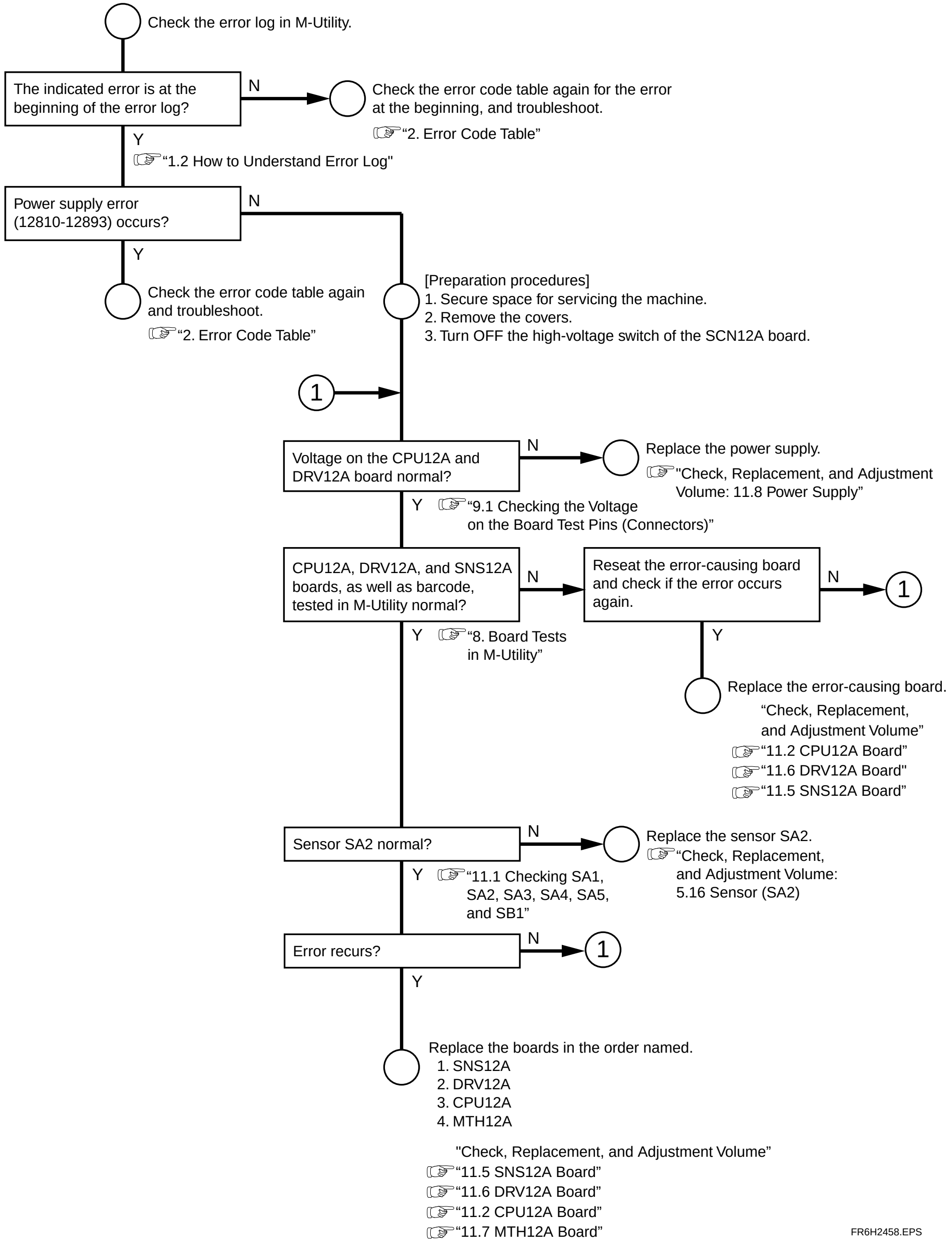
## 11380 Maximum empty cassette setting

During bootup, an attempt is made to eject (load) the remaining IP into the cassette, but the cassette has not been set.

### ■ I/O Locations


Cassette set unit
A unit
Suction cup HP sensor
SA4
IP sensor
SB1
Barcode reader
Cassette ejection sensor
SA1
M
Transport motor
MB1
Hold sensor
SA3
Cassette IN sensor
SA2
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Subscanning unit
Z unit
FR6H2205.EPS

### ■ Analysis Flow

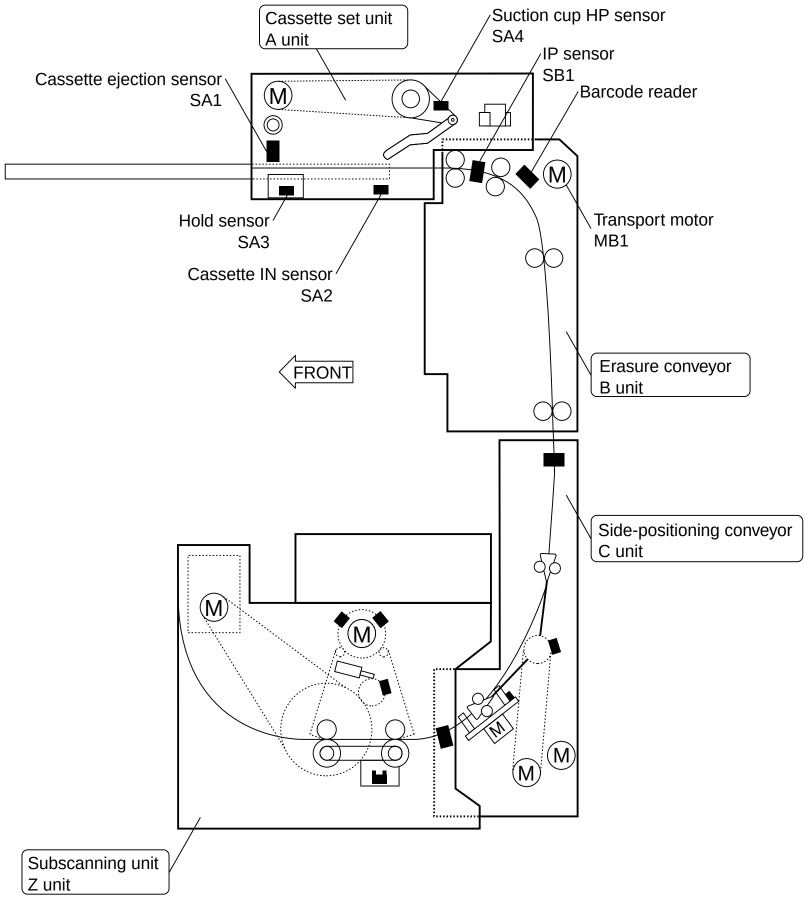

Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
☞"11.5 SNS12A Board"
Sensor SA2 normal?
N
Replace the sensor SA2.
☞"Check, Replacement, and Adjustment Volume: 5.16 Sensor (SA2)
Y
☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"
Error recurs?
N
1
Y
Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2458.EPS

# 11387

## 11387 Recovery IP processing

During bootup, the remaining IP that has not been erased is detected.

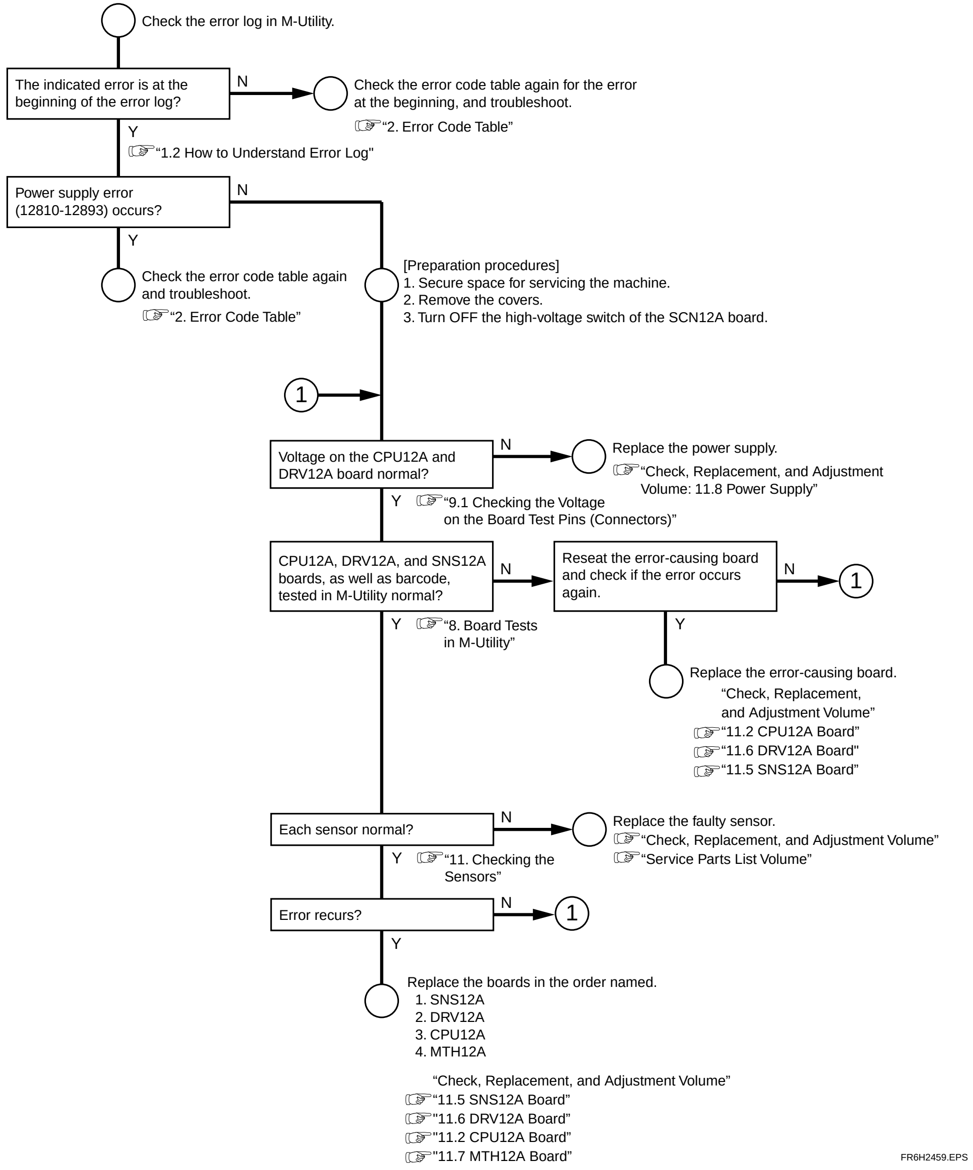
### ■ I/O Locations



Cassette set unit
A unit
Suction cup HP sensor
SA4
IP sensor
SB1
Barcode reader
Cassette ejection sensor
SA1
M
Hold sensor
SA3
Cassette IN sensor
SA2
Transport motor
MB1
FRONT
Erasure conveyor
B unit
Side-positioning conveyor
C unit
Subscanning unit
Z unit

FR6H2205.EPS

### ■ Analysis Flow



Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

① →

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.
- N: → ①
- Y: Replace the error-causing board.
  "Check, Replacement, and Adjustment Volume"
  ☞"11.2 CPU12A Board"
  ☞"11.6 DRV12A Board"
  ☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Each sensor normal?

N: Replace the faulty sensor.
☞"Check, Replacement, and Adjustment Volume"
☞"Service Parts List Volume"

Y: ☞"11. Checking the Sensors"

Error recurs?

N: → ①

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2459.EPS

# 12313, 13314

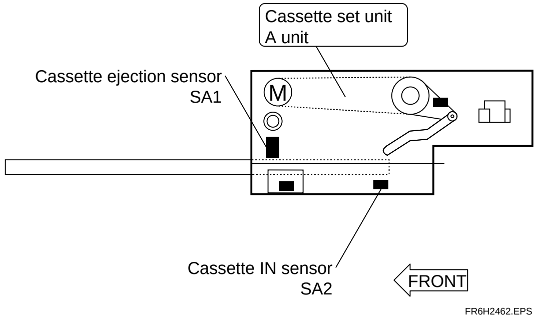
### 12313 Cassette not detected

During routine processing, while the SolA1 is tuned ON to hold the cassette, the cassette is pulled all the way out of the shutter, and SA1 transitions to OPEN.

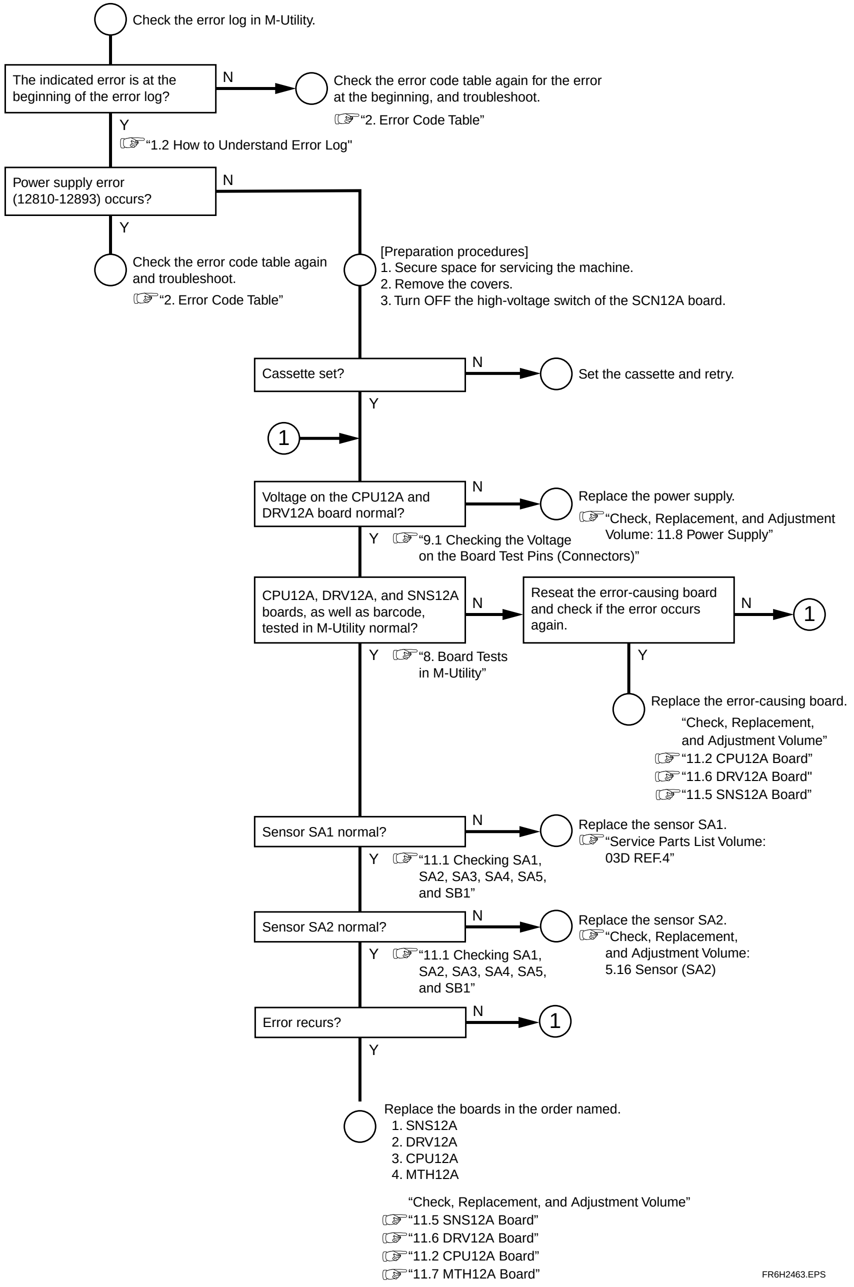
### 13314 Cassette detection logic error

During routine processing, the SA2 is CLOSE (the cassette is detected), but the SA1 is OPEN (the shutter is closed).

## ■ I/O Locations



## ■ Analysis Flow


Check the error log in M-Utility.

The indicated error is at the beginning of the error log?

N: Check the error code table again for the error at the beginning, and troubleshoot. ☞"2. Error Code Table"

Y: ☞"1.2 How to Understand Error Log"

Power supply error (12810-12893) occurs?

Y: Check the error code table again and troubleshoot. ☞"2. Error Code Table"

N: [Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.

Cassette set?

N: Set the cassette and retry.

Y

1 →

Voltage on the CPU12A and DRV12A board normal?

N: Replace the power supply. ☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

CPU12A, DRV12A, and SNS12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.

- N: → 1
- Y: Replace the error-causing board. "Check, Replacement, and Adjustment Volume" ☞"11.2 CPU12A Board" ☞"11.6 DRV12A Board" ☞"11.5 SNS12A Board"

Y: ☞"8. Board Tests in M-Utility"

Sensor SA1 normal?

N: Replace the sensor SA1. ☞"Service Parts List Volume: 03D REF.4"

Y: ☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"

Sensor SA2 normal?

N: Replace the sensor SA2. ☞"Check, Replacement, and Adjustment Volume: 5.16 Sensor (SA2)

Y: ☞"11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1"

Error recurs?

N: → 1

Y: Replace the boards in the order named.
1. SNS12A
2. DRV12A
3. CPU12A
4. MTH12A

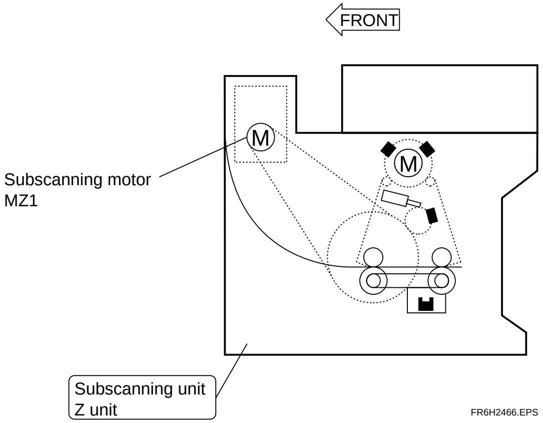
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

# 12345

## 12345 FFM drive W.F. disorder

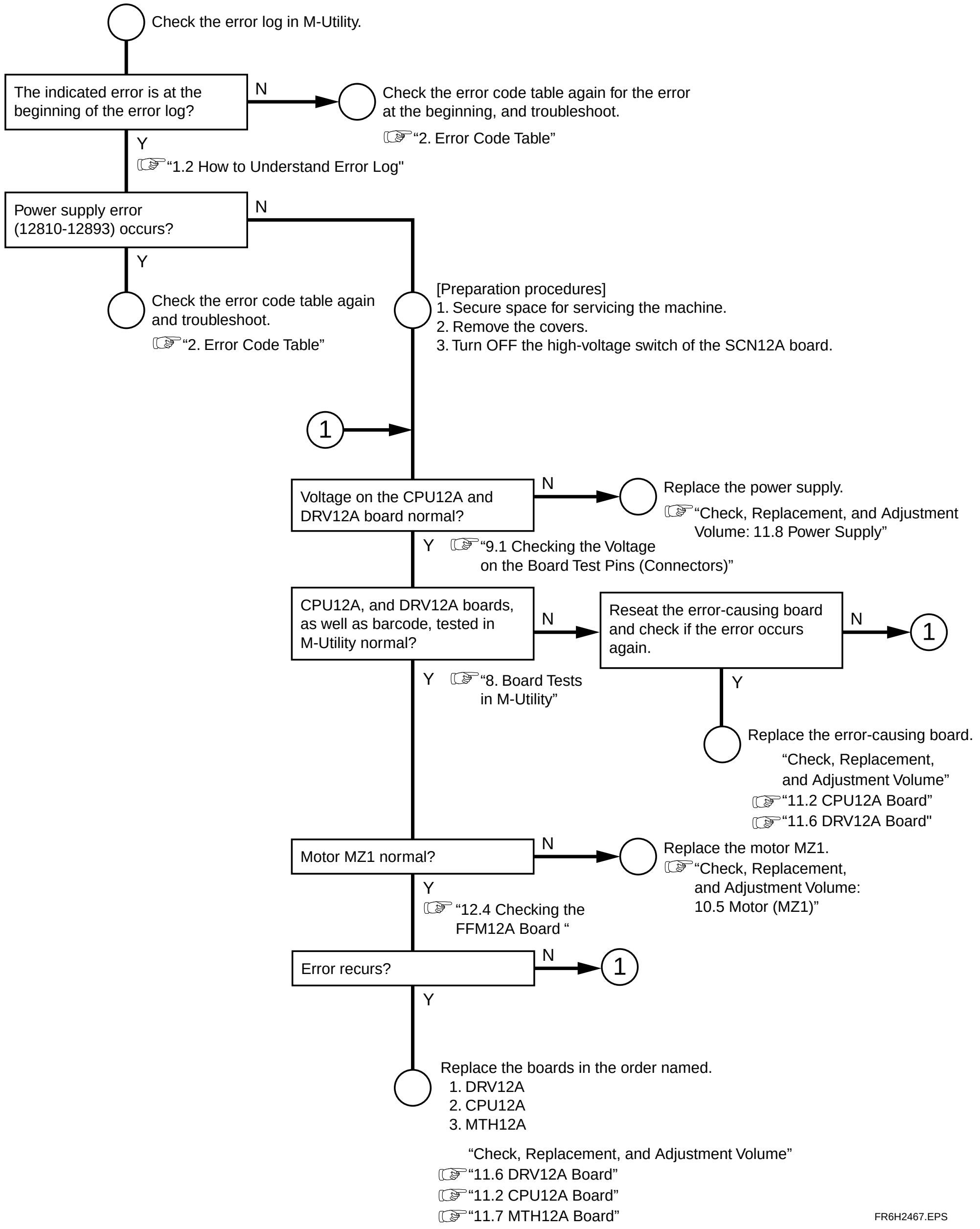
During routine processing, wow-flutter error (irregular revolutions) of the FFM motor is detected.

### ■ I/O Locations


FRONT
Subscanning motor
MZ1
M
M
Subscanning unit
Z unit

FR6H2466.EPS

### ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A and DRV12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A, and DRV12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.6 DRV12A Board"
Motor MZ1 normal?
N
Replace the motor MZ1.
☞"Check, Replacement, and Adjustment Volume: 10.5 Motor (MZ1)"
Y
☞ "12.4 Checking the FFM12A Board "
Error recurs?
N
1
Y
Replace the boards in the order named.
1. DRV12A
2. CPU12A
3. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2467.EPS

# 12324, 14324

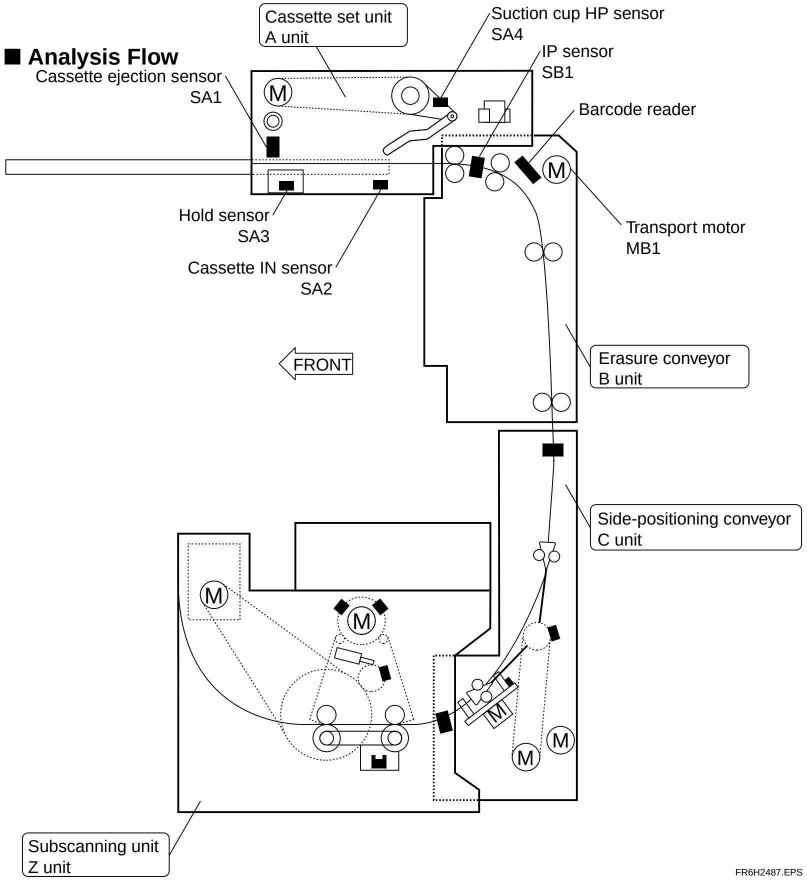
### 12324 Barcode reading error

During routine processing, an attempt to read the barcode for feed conveyance fails. Retries (four times or more) are performed, but error results.

### 14324 Barcode reading retry

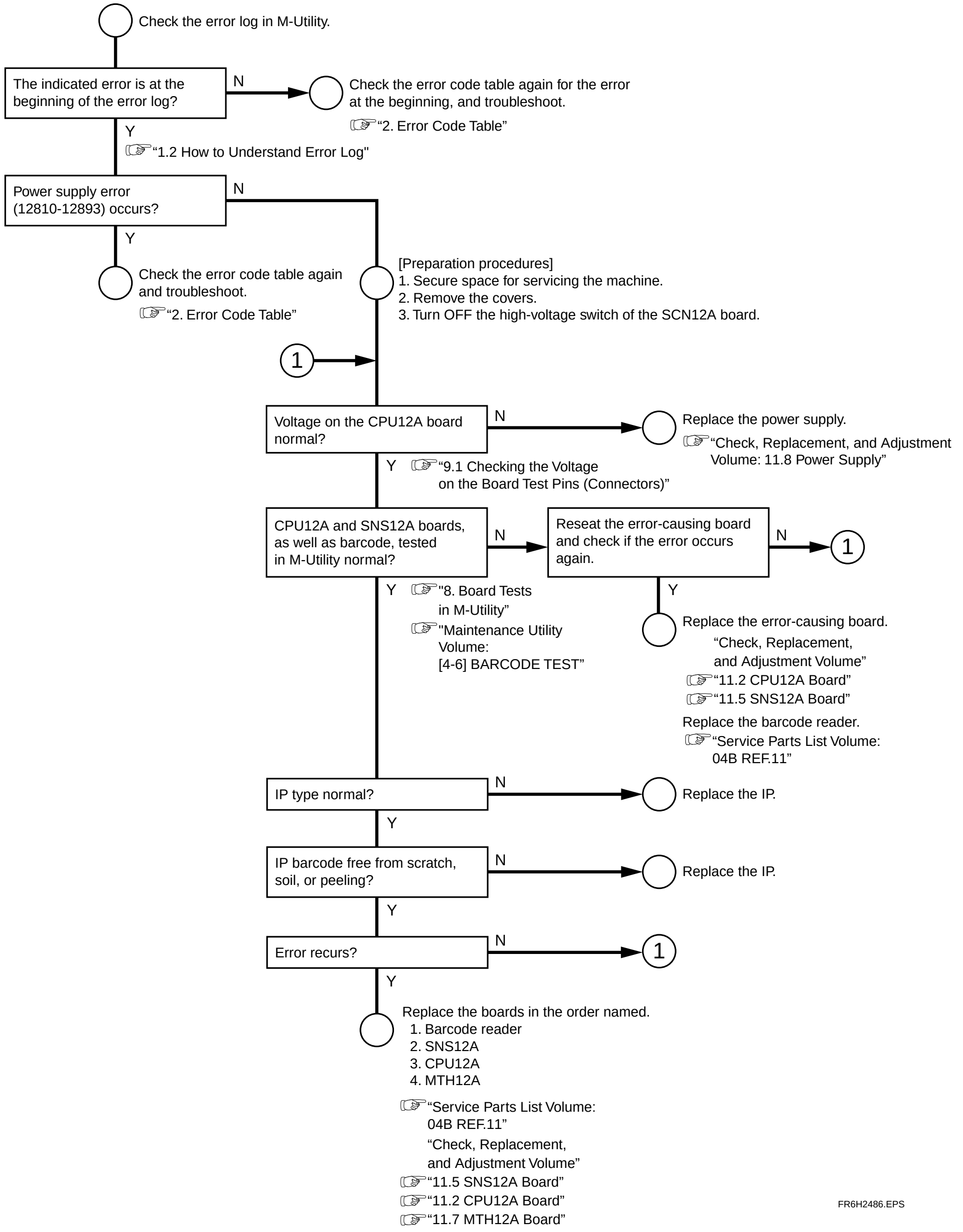
During routine processing, because an attempt to read the barcode for feed conveyance fails, retries (within three times) are performed.

## ■ I/O Locations


Cassette set unit
A unit
Suction cup HP sensor
SA4
IP sensor
SB1
Cassette ejection sensor
SA1
Barcode reader
M
Hold sensor
SA3
Cassette IN sensor
SA2
Transport motor
MB1
Erasure conveyor
B unit
FRONT
Side-positioning conveyor
C unit
Subscanning unit
Z unit

FR6H2487.EPS

## ■ Analysis Flow


Check the error log in M-Utility.
The indicated error is at the beginning of the error log?
N
Check the error code table again for the error at the beginning, and troubleshoot.
☞"2. Error Code Table"
Y
☞"1.2 How to Understand Error Log"
Power supply error (12810-12893) occurs?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
[Preparation procedures]
1. Secure space for servicing the machine.
2. Remove the covers.
3. Turn OFF the high-voltage switch of the SCN12A board.
1
Voltage on the CPU12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A and SNS12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
☞"Maintenance Utility Volume: [4-6] BARCODE TEST"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.5 SNS12A Board"
Replace the barcode reader.
☞"Service Parts List Volume: 04B REF.11"
IP type normal?
N
Replace the IP.
Y
IP barcode free from scratch, soil, or peeling?
N
Replace the IP.
Y
Error recurs?
N
1
Y
Replace the boards in the order named.
1. Barcode reader
2. SNS12A
3. CPU12A
4. MTH12A
☞"Service Parts List Volume: 04B REF.11"
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2486.EPS

# 5. Error Code Analysis Flow (Scanner)

## 10230

### ■ Error Occurrence Conditions

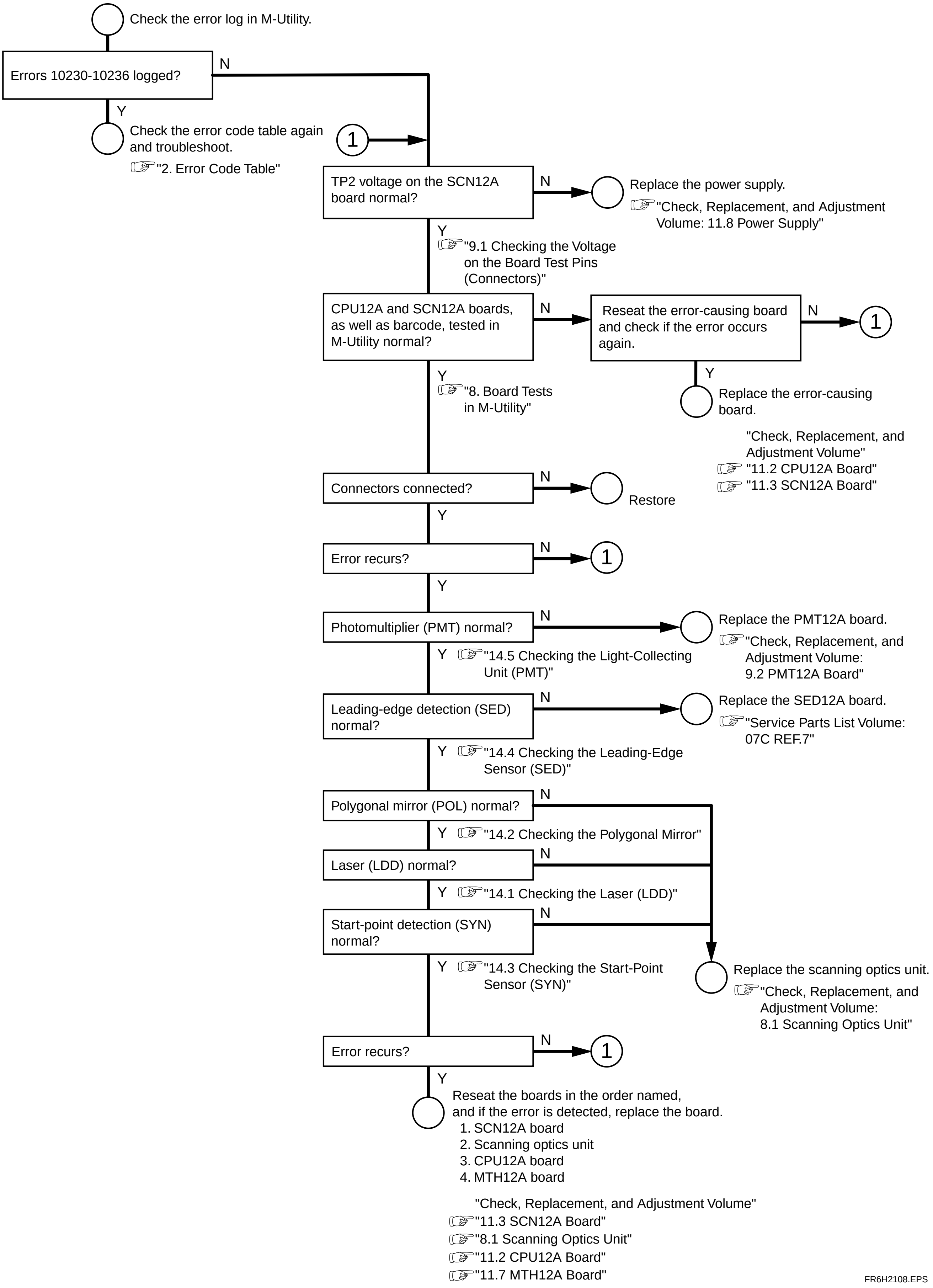
**10230 Scanner power supply error during bootup**

During bootup, because the connector (CN1 on the PMT12A board, CNE1 on the scanning optics unit, CNE2 on the scanning optics unit, CN1 on the SYN12A board, or CN1 on the LDD12A board) is disconnected, the laser (LDD), start-point detection (SYN), and photomultiplier (PMT) functions are disabled.

Because the laser is not enabled, the leading-edge detection (SED) cannot be performed (detail code: D0F603).

Note that if the HV is OFF, the detail code is D0F403.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞ "11.2 CPU12A Board"
☞ "11.3 SCN12A Board"
Y
☞"8. Board Tests in M-Utility"
Connectors connected?
N
Restore
Y
Error recurs?
N
1
Y
Photomultiplier (PMT) normal?
N
Replace the PMT12A board.
☞"Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board"
Y ☞"14.5 Checking the Light-Collecting Unit (PMT)"
Leading-edge detection (SED) normal?
N
Replace the SED12A board.
☞"Service Parts List Volume: 07C REF.7"
Y ☞"14.4 Checking the Leading-Edge Sensor (SED)"
Polygonal mirror (POL) normal?
N
Y ☞"14.2 Checking the Polygonal Mirror"
Laser (LDD) normal?
N
Y ☞"14.1 Checking the Laser (LDD)"
Start-point detection (SYN) normal?
N
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
Y ☞"14.3 Checking the Start-Point Sensor (SYN)"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"8.1 Scanning Optics Unit"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2108.EPS

# 10231

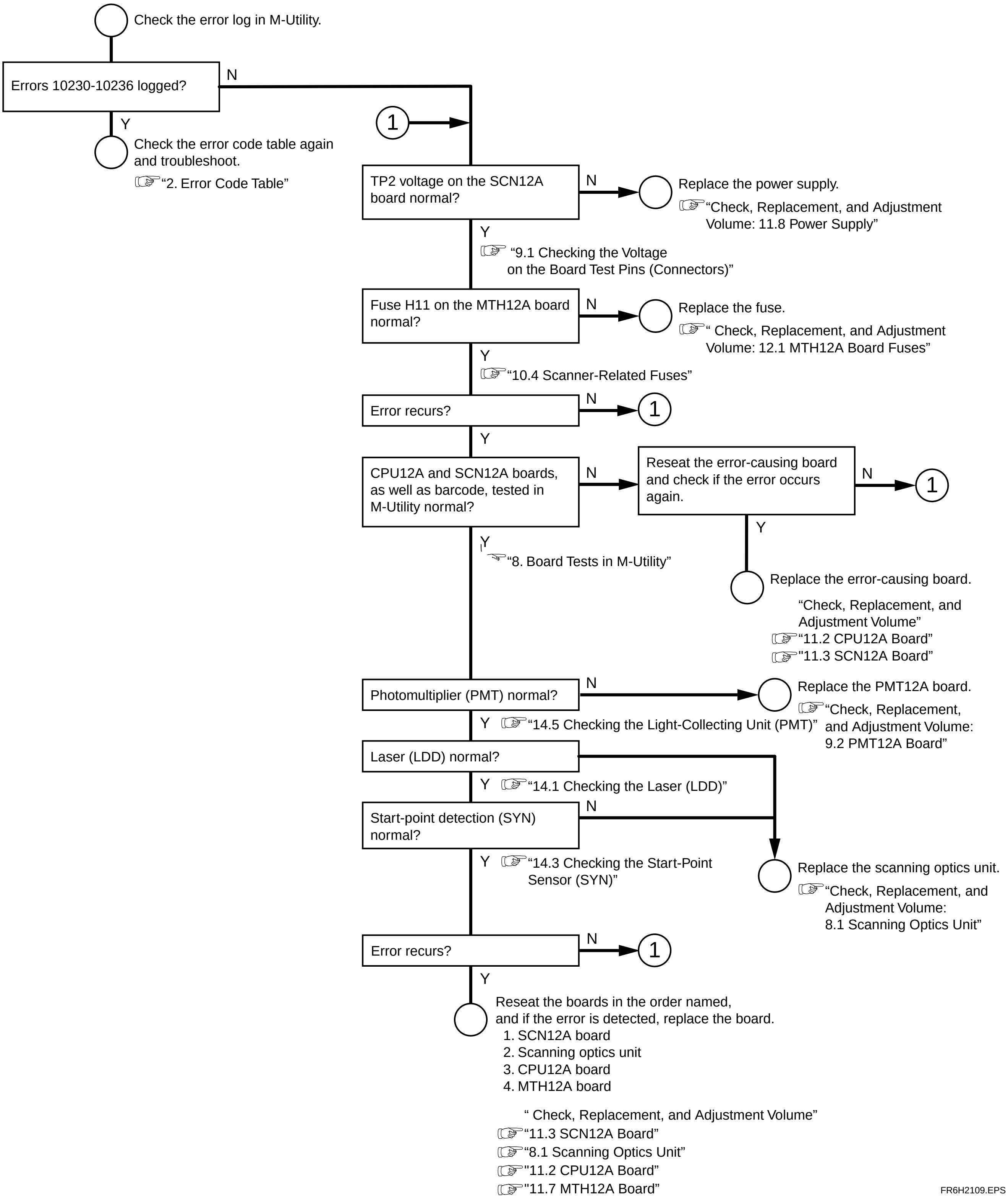
## ■ Error Occurrence Conditions

### 10231 Scanner power supply error during bootup (1)

During bootup, because +15V is not supplied to the SCN12A board due to blow of the fuse (H11 on the MTH board) or +15V power supply error, most of the functions, except for the polygonal mirror (POL) and laser (LDD), are disabled (detail code: A0DF03).

Note that if the HV is OFF, the detail code is A0DD03.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞ "9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Fuse H11 on the MTH12A board normal?
N
Replace the fuse.
☞" Check, Replacement, and Adjustment Volume: 12.1 MTH12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
Y
☞"8. Board Tests in M-Utility"
Photomultiplier (PMT) normal?
N
Replace the PMT12A board.
☞"Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board"
Y ☞"14.5 Checking the Light-Collecting Unit (PMT)"
Laser (LDD) normal?
Y ☞"14.1 Checking the Laser (LDD)"
N
Start-point detection (SYN) normal?
Y ☞"14.3 Checking the Start-Point Sensor (SYN)"
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
" Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"8.1 Scanning Optics Unit"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2109.EPS

# 10232

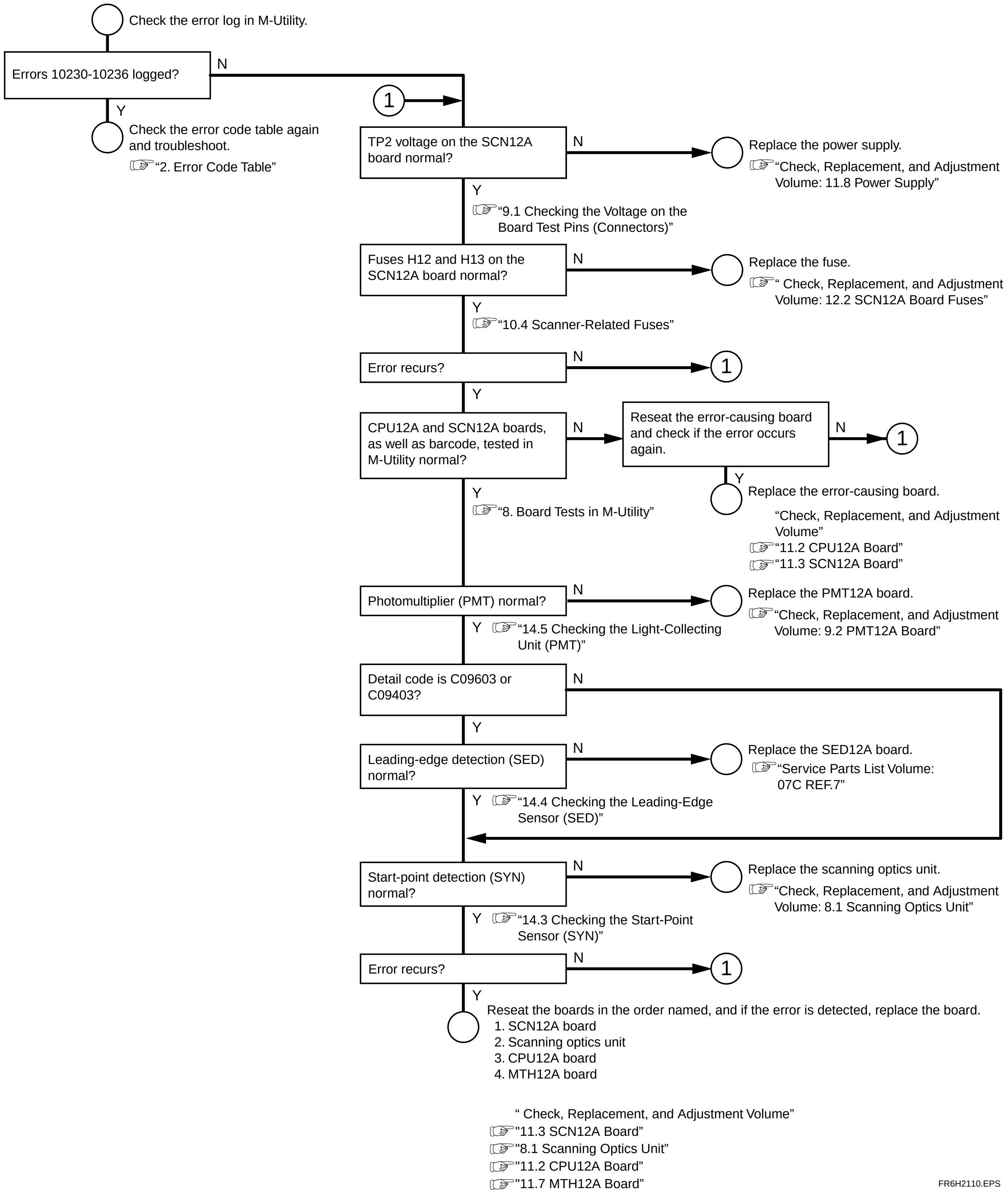
## ■ Error Occurrence Conditions

### 10232 Scanner power supply error during bootup (2)

During bootup, because the fuse (H12 on the SCN12A board) is blown, the photomultiplier (PMT) and start-point detection (SYN) functions are disabled (detail code: 809603).

Note that if the HV is OFF, the detail code is 809403.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞“Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞“9.1 Checking the Voltage on the Board Test Pins (Connectors)”
Fuses H12 and H13 on the SCN12A board normal?
N
Replace the fuse.
☞“ Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses”
Y
☞“10.4 Scanner-Related Fuses”
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞“11.2 CPU12A Board”
☞“11.3 SCN12A Board”
Y
☞“8. Board Tests in M-Utility”
Photomultiplier (PMT) normal?
N
Replace the PMT12A board.
☞“Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board”
Y
☞“14.5 Checking the Light-Collecting Unit (PMT)”
Detail code is C09603 or C09403?
N
Y
Leading-edge detection (SED) normal?
N
Replace the SED12A board.
☞“Service Parts List Volume: 07C REF.7”
Y
☞“14.4 Checking the Leading-Edge Sensor (SED)”
Start-point detection (SYN) normal?
N
Replace the scanning optics unit.
☞“Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit”
Y
☞“14.3 Checking the Start-Point Sensor (SYN)”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
“ Check, Replacement, and Adjustment Volume”
☞"11.3 SCN12A Board”
☞"8.1 Scanning Optics Unit”
☞"11.2 CPU12A Board”
☞"11.7 MTH12A Board”
FR6H2110.EPS

# 10233

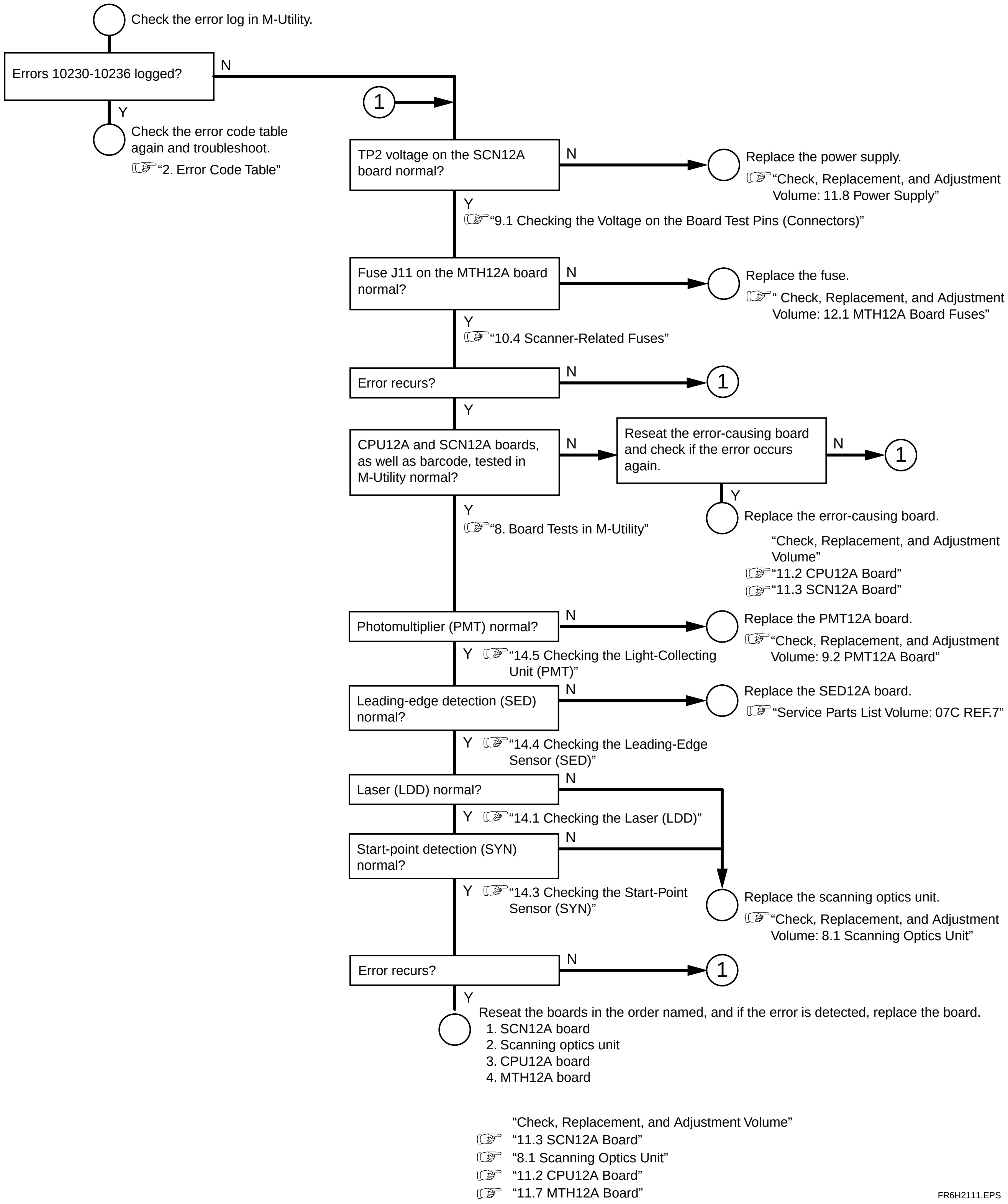
## ■ Error Occurrence Conditions

### 10233 Scanner power supply error during bootup (3)

During bootup, because the fuse (J11 on the MTH12A board) is blown or because -15V is not supplied to the SCN12A board, the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled.

Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C1DD03).

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞“Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞“9.1 Checking the Voltage on the Board Test Pins (Connectors)”
Fuse J11 on the MTH12A board normal?
N
Replace the fuse.
☞“ Check, Replacement, and Adjustment Volume: 12.1 MTH12A Board Fuses”
Y
☞“10.4 Scanner-Related Fuses”
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞“11.2 CPU12A Board”
☞“11.3 SCN12A Board”
Y
☞“8. Board Tests in M-Utility”
Photomultiplier (PMT) normal?
N
Replace the PMT12A board.
☞“Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board”
Y
☞“14.5 Checking the Light-Collecting Unit (PMT)”
Leading-edge detection (SED) normal?
N
Replace the SED12A board.
☞“Service Parts List Volume: 07C REF.7”
Y
☞“14.4 Checking the Leading-Edge Sensor (SED)”
Laser (LDD) normal?
N
Y
☞“14.1 Checking the Laser (LDD)”
Start-point detection (SYN) normal?
N
Replace the scanning optics unit.
☞“Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit”
Y
☞“14.3 Checking the Start-Point Sensor (SYN)”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
“Check, Replacement, and Adjustment Volume”
☞ “11.3 SCN12A Board”
☞ “8.1 Scanning Optics Unit”
☞ “11.2 CPU12A Board”
☞ “11.7 MTH12A Board”

FR6H2111.EPS

# 10234

## ■ Error Occurrence Conditions

### 10234 Scanner power supply error during bootup (4)

- During bootup, because the fuse (J12 on the SCN12A board) or the fuse (H12 on the SCN12A board) is blown, ±15V is not supplied to the SCN12A board, and the photomultiplier (PMT), start-point detection (SYN), laser (LDD), and SCN board (PLL) functions are disabled.

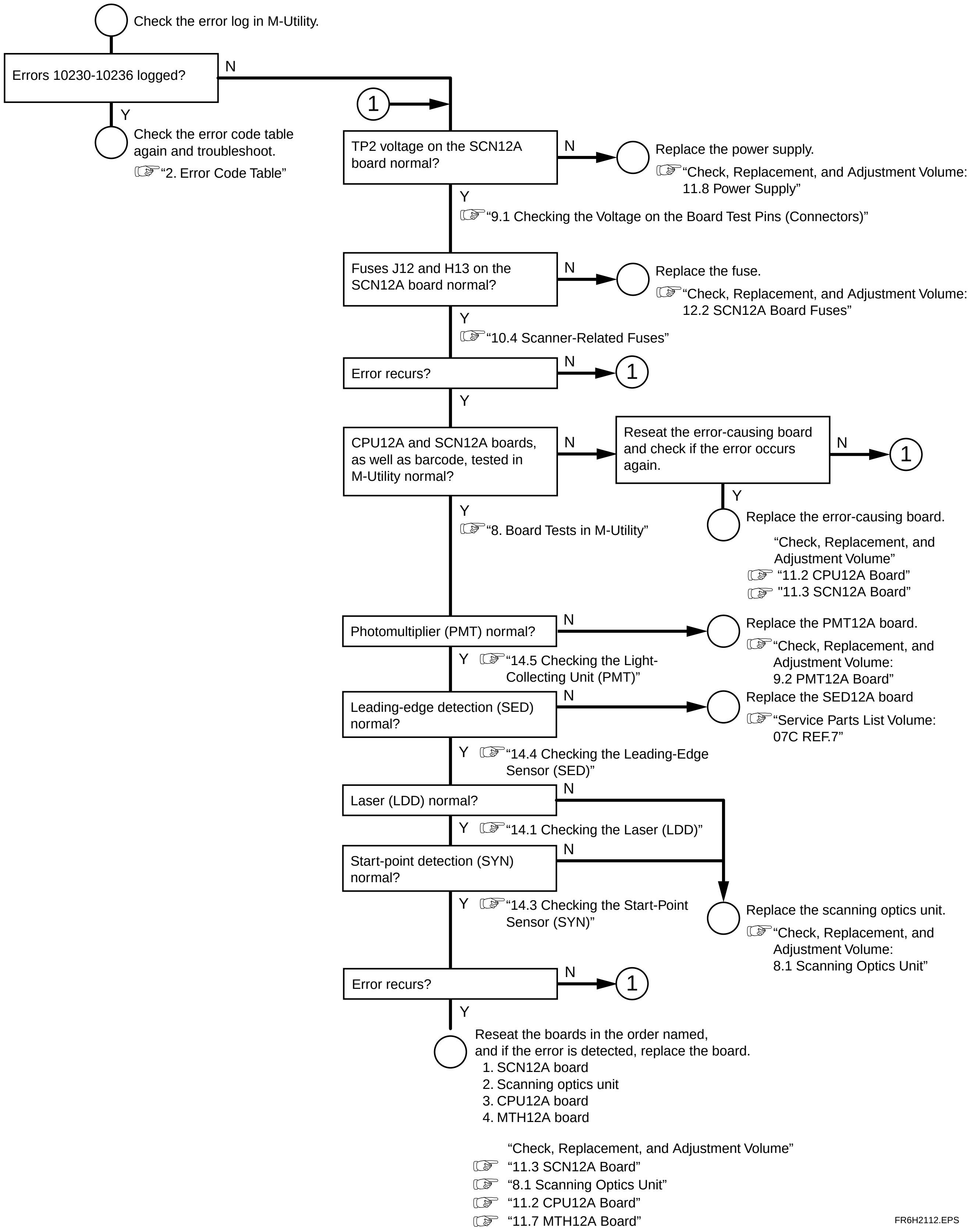
  Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C0DC03).
- During bootup, because -15V is not supplied to the SCN12A board due to blow of the fuse (J11 on the MTH12A board) or -15V (SLOT4) power supply error, the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled.

  Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C0D400).
- During bootup, because ±15V is not supplied, except for the laser (LDD), due to blow of the fuse (J11 on the MTH12A board, or J12, H12, or H14 on the SCN board), the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled.

  Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: C0D603).

  Note that if the HV is OFF, the detail code is C0D400.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞“Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞“9.1 Checking the Voltage on the Board Test Pins (Connectors)”
Fuses J12 and H13 on the SCN12A board normal?
N
Replace the fuse.
☞“Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses”
Y
☞“10.4 Scanner-Related Fuses”
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞ “11.2 CPU12A Board”
☞ "11.3 SCN12A Board”
Y
☞“8. Board Tests in M-Utility”
Photomultiplier (PMT) normal?
N
Replace the PMT12A board.
☞“Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board”
Y
☞“14.5 Checking the Light-Collecting Unit (PMT)”
Leading-edge detection (SED) normal?
N
Replace the SED12A board
☞“Service Parts List Volume: 07C REF.7”
Y
☞“14.4 Checking the Leading-Edge Sensor (SED)”
Laser (LDD) normal?
N
Y
☞“14.1 Checking the Laser (LDD)”
Start-point detection (SYN) normal?
N
Y
☞“14.3 Checking the Start-Point Sensor (SYN)”
Replace the scanning optics unit.
☞“Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
“Check, Replacement, and Adjustment Volume”
☞ “11.3 SCN12A Board”
☞ “8.1 Scanning Optics Unit”
☞ “11.2 CPU12A Board”
☞ “11.7 MTH12A Board”

FR6H2112.EPS

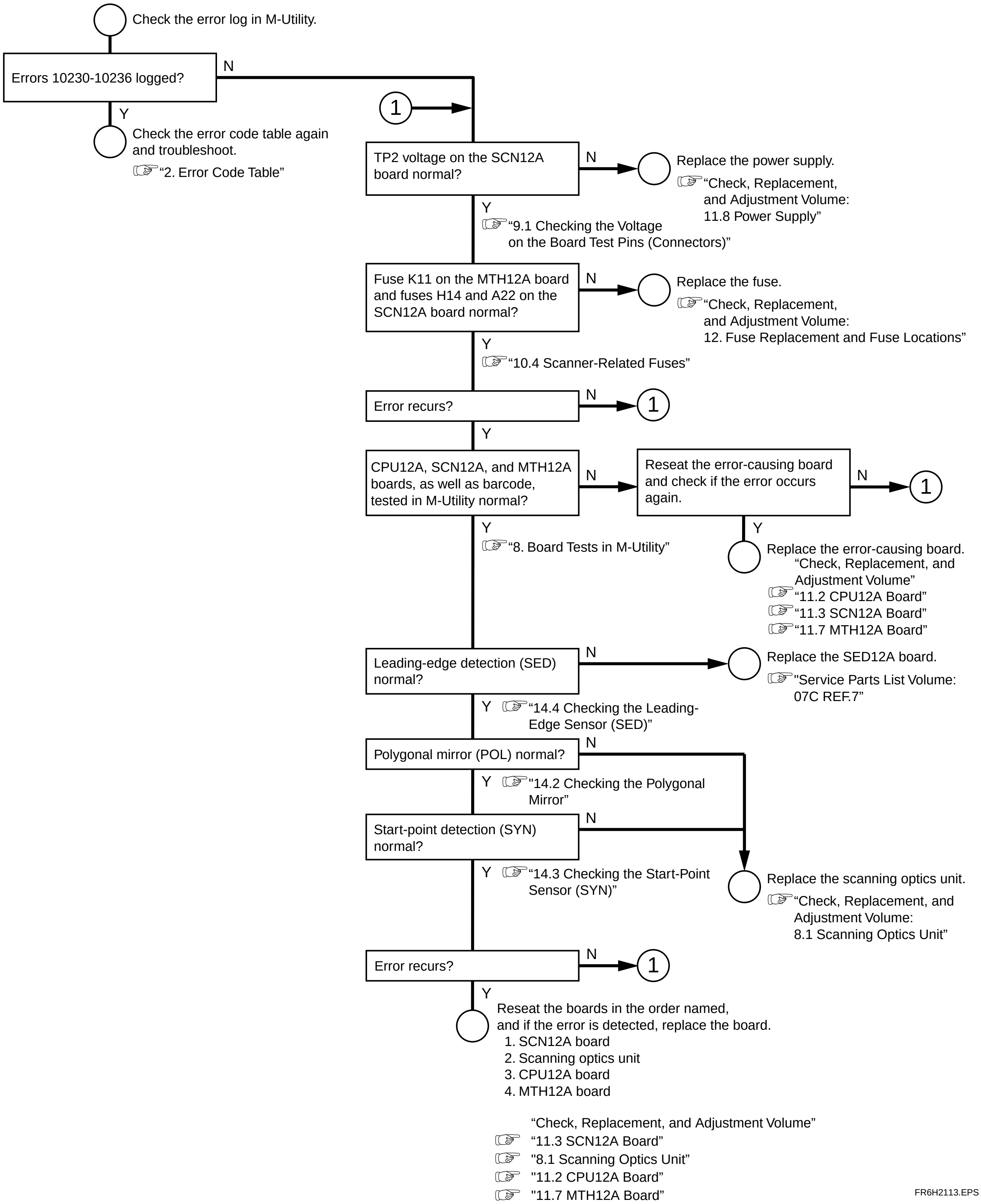
# 10235

## ■ Error Occurrence Conditions

### 10235 Scanner power supply error during bootup (5)

- During bootup, because 24V is not supplied to the SCN12A board due to blow of the fuse (K11 on the MTH12A board) or 24V (SLOT5) power supply error, the polygonal mirror (POL) function is disabled (detail code: D01403).
- During bootup, because the fuses (H14 and A22 on the SCN board) are blown or because 5V is not supplied to the SYN12A board and SED12A board, the leading-edge detection (SED) and start-point detection (SYN) functions are disabled (detail code: C01403).

## ■ Analysis Flow



Check the error log in M-Utility.

Errors 10230-10236 logged?

Y: Check the error code table again and troubleshoot.
☞"2. Error Code Table"

N: ①

TP2 voltage on the SCN12A board normal?

N: Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

Fuse K11 on the MTH12A board and fuses H14 and A22 on the SCN12A board normal?

N: Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"

Y: ☞"10.4 Scanner-Related Fuses"

Error recurs?

N: ①

Y

CPU12A, SCN12A, and MTH12A boards, as well as barcode, tested in M-Utility normal?

N: Reseat the error-causing board and check if the error occurs again.

N: ①

Y: Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
☞"11.7 MTH12A Board"

Y: ☞"8. Board Tests in M-Utility"

Leading-edge detection (SED) normal?

N: Replace the SED12A board.
☞"Service Parts List Volume: 07C REF.7"

Y: ☞"14.4 Checking the Leading-Edge Sensor (SED)"

Polygonal mirror (POL) normal?

Y: ☞"14.2 Checking the Polygonal Mirror"

Start-point detection (SYN) normal?

Y: ☞"14.3 Checking the Start-Point Sensor (SYN)"

N: Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"

Error recurs?

N: ①

Y: Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board

"Check, Replacement, and Adjustment Volume"
☞ "11.3 SCN12A Board"
☞ "8.1 Scanning Optics Unit"
☞ "11.2 CPU12A Board"
☞ "11.7 MTH12A Board"

FR6H2113.EPS

# 10236

## ■ Error Occurrence Conditions

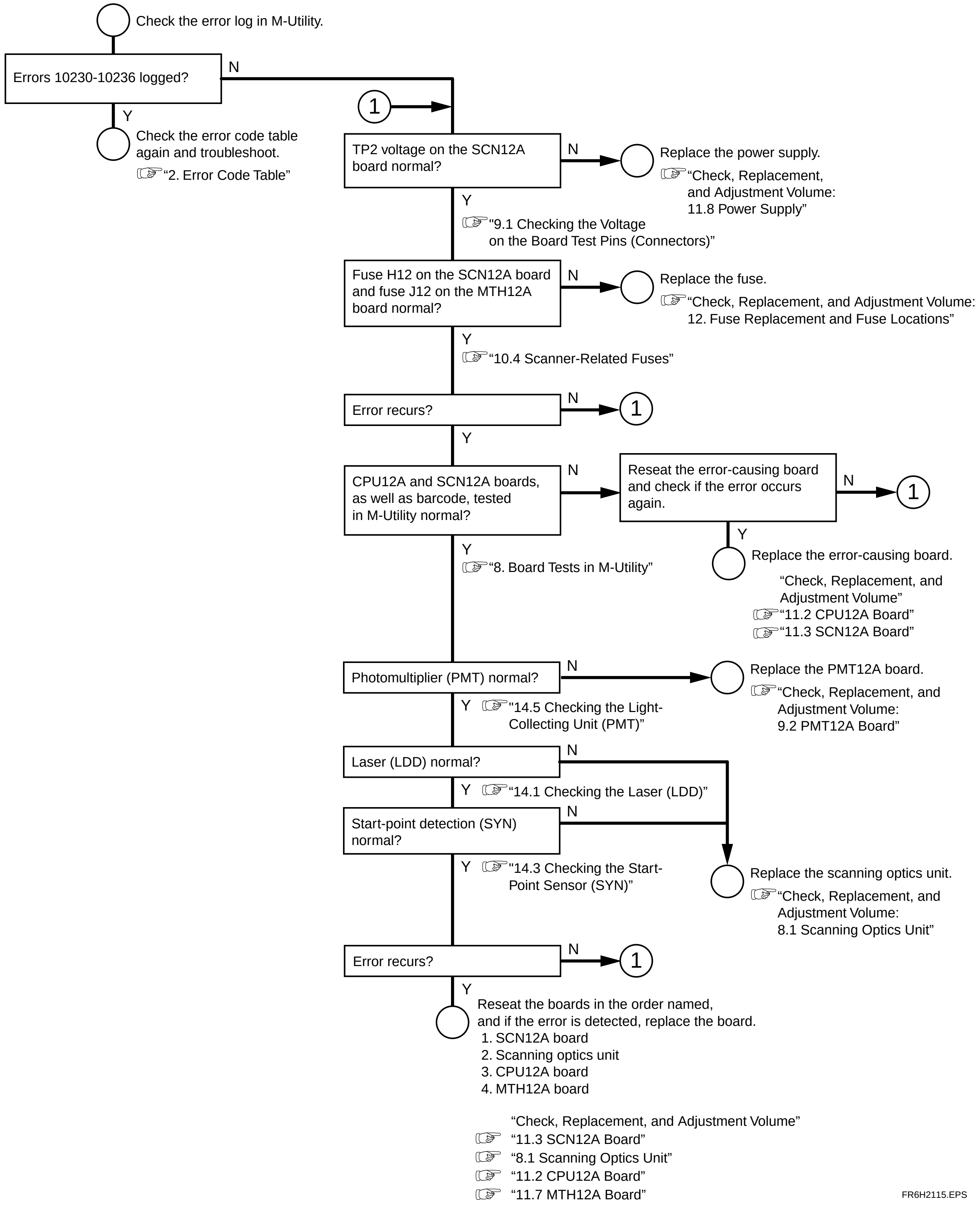
### 10236 Scanner power supply error during bootup (6)

During bootup, because ±15V is not supplied to the SYN12A board, PMT12A board, and LDD12A board due to blow of the fuses (J12 and H12 on the SCN board), the photomultiplier (PMT), start-point detection (SYN), and laser (LDD) functions are disabled.

Because the laser (LDD) is not enabled, the leading-edge detection (SED) cannot be performed (detail code: 819603).

Note that if the HV is OFF, the detail code is 819403.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞“Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)”
Fuse H12 on the SCN12A board and fuse J12 on the MTH12A board normal?
N
Replace the fuse.
☞“Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations”
Y
☞“10.4 Scanner-Related Fuses”
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞“11.2 CPU12A Board”
☞“11.3 SCN12A Board”
Y
☞“8. Board Tests in M-Utility”
Photomultiplier (PMT) normal?
N
Replace the PMT12A board.
☞“Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board”
Y
☞"14.5 Checking the Light-Collecting Unit (PMT)”
Laser (LDD) normal?
N
Y
☞“14.1 Checking the Laser (LDD)”
Start-point detection (SYN) normal?
N
Replace the scanning optics unit.
☞“Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit”
Y
☞"14.3 Checking the Start-Point Sensor (SYN)”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
“Check, Replacement, and Adjustment Volume”
☞ “11.3 SCN12A Board”
☞ “8.1 Scanning Optics Unit”
☞ “11.2 CPU12A Board”
☞ “11.7 MTH12A Board”
FR6H2115.EPS

# 10281, 12201, 12281, 13201, 14281

## ■ Error Occurrence Conditions

### 10281 Start-point detection error during bootup (1)

During bootup, because the signal from the start-point detection (SYN) is faulty, the SCN12A board does not operate normally (detail code: 801C03).

### 12201 Start-point detection error

During bootup and routine processing, error for the start-point detection signal (SSH, SSL) is detected.

### 12281 Start-point detection error (1)

During routine processing, the disabled state of the start-point detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801C03).

Alternatively, the disabled state of the start-point detection (SYN) function, and error for the PLL function on the SCN12A board are detected (detail code: 800C03).

Alternatively, during routine processing, the disabled state of the start-point detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801401).

### 13201 Start-point detection error

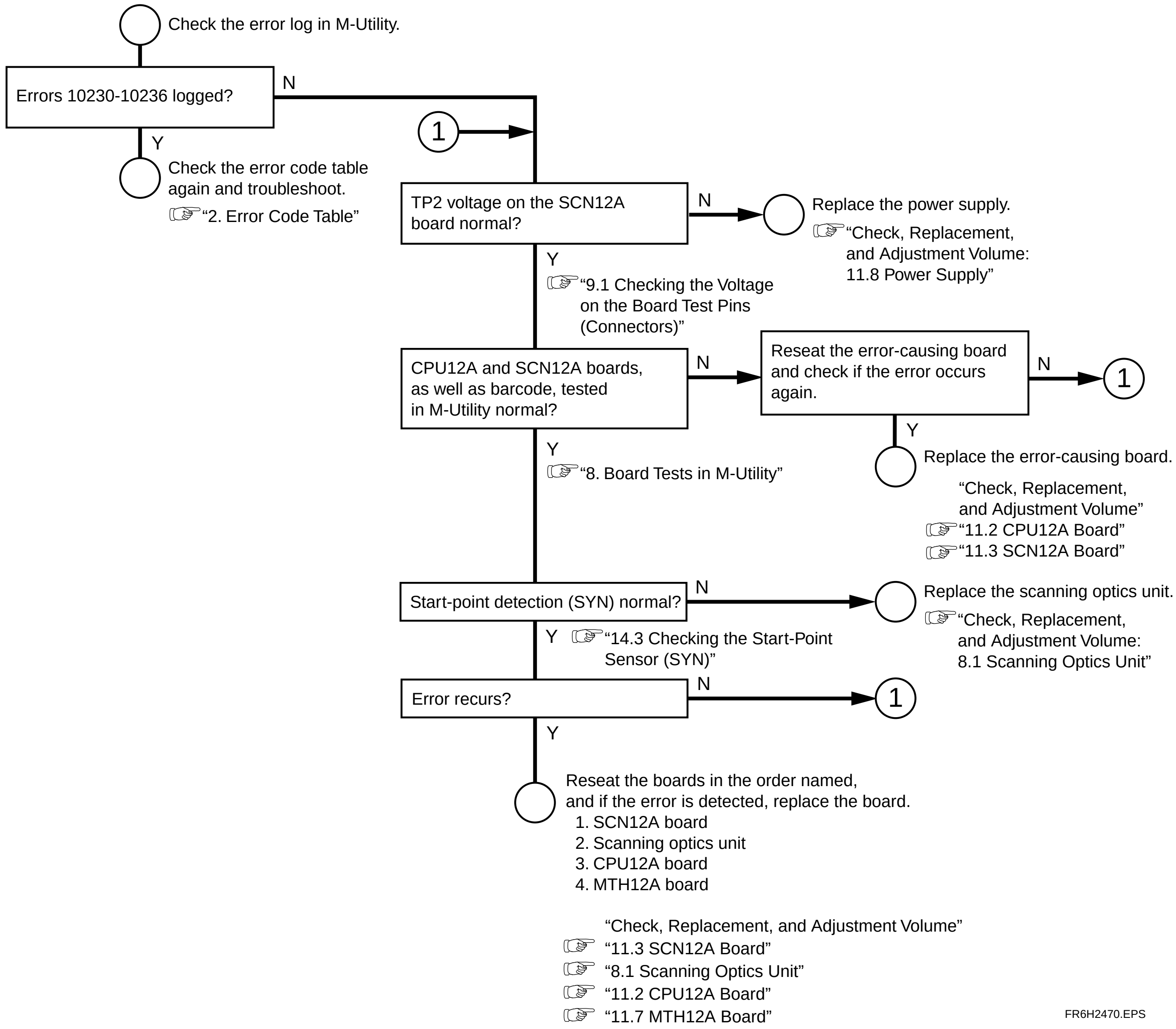
During M-Utility operation, only error for the start-point detection signal (SSH, SSL) is detected.

### 14281 Start-point detection error during bootup (1)

- During bootup, the disabled state of the start-point detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801C03).

  Alternatively, the disabled state of the start-point detection (SYN) function and error for the PLL function on the SCN12A board are detected (detail code: 800C03). Alternatively, during routine processing, the disabled state of the start-point-detection (SYN) function, and error for the PLL function and polygon rotation detection function on the SCN12A board are detected (detail code: 801401).
- During bootup, the start-point detection (SYN) function is disabled (detail code: 801402). Alternatively, the start-point detection (SSH, SSL) cannot be performed (detail code: 800002).

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
Y
☞"8. Board Tests in M-Utility"
Start-point detection (SYN) normal?
N
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
Y
☞"14.3 Checking the Start-Point Sensor (SYN)"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞ "11.3 SCN12A Board"
☞ "8.1 Scanning Optics Unit"
☞ "11.2 CPU12A Board"
☞ "11.7 MTH12A Board"
FR6H2470.EPS

# 10298, 14298

## ■ Error Occurrence Conditions

### 10298 Before-reading scanner retry error

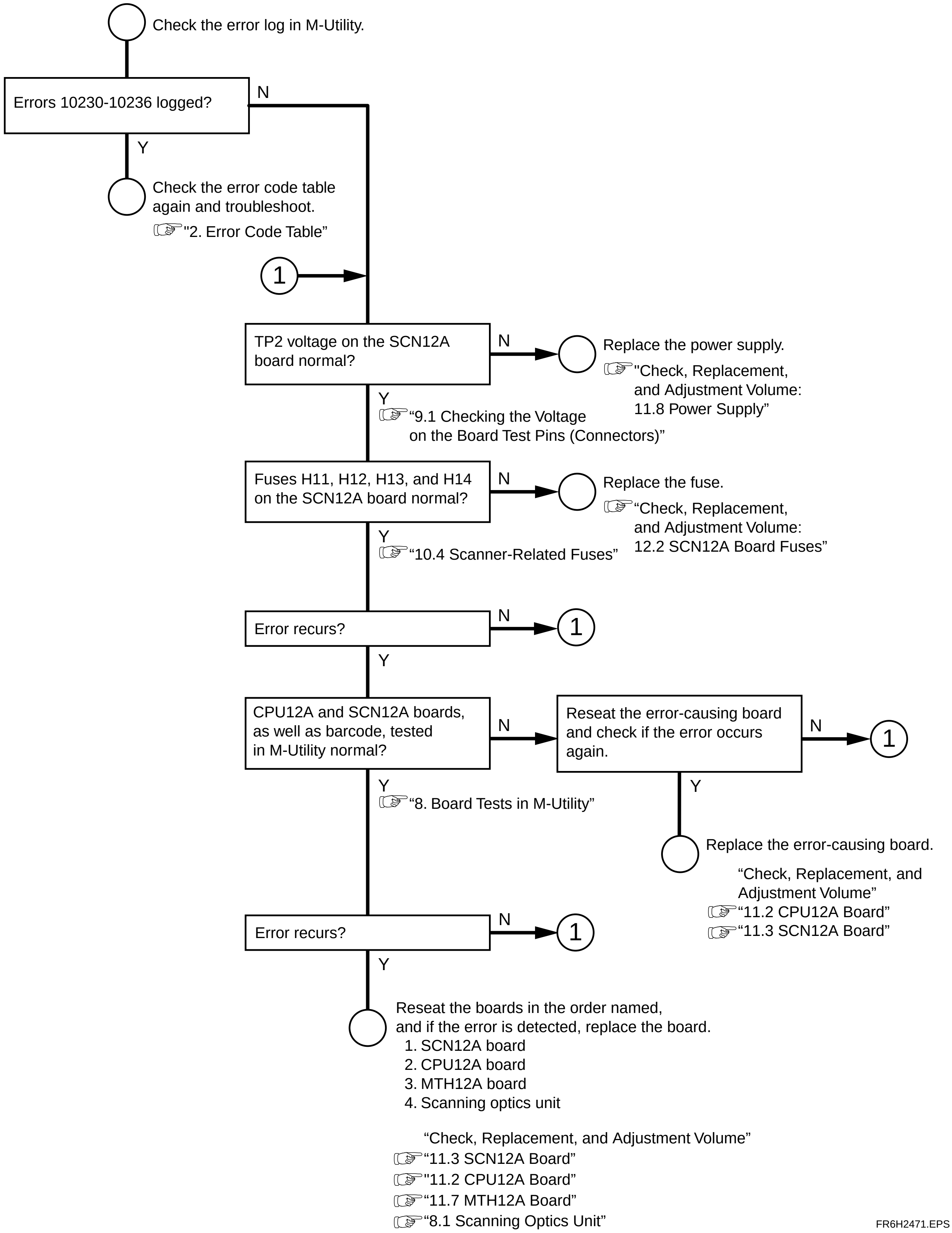
During routine processing, because the scanner-related error is detected, the IP is returned to the cassette and the scanner is initialized.

The routine processing is retried again, but the scanner-related error recurs.

### 14298 Before-reading scanner retry error

During routine processing, because the scanner-related error is detected, the IP is returned to the cassette and the scanner is initialized.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Fuses H11, H12, H13, and H14 on the SCN12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. CPU12A board
3. MTH12A board
4. Scanning optics unit
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
☞"8.1 Scanning Optics Unit"
FR6H2471.EPS

# 11208, 11272, 11273, 12212, 12272, 12273, 13208, 13212, 14283

## ■ Error Occurrence Conditions

### 11208 Laser drive current error

During bootup and routine processing, the laser drive current value (LDIF) is more than 1.4 times the factory default value.

### 11272 Insufficient laser light intensity

During bootup, laser OK signal (LD1OKH, LD1OKL) error is detected.

### 11273 Laser life warning

During bootup and routine processing, the laser drive current value (LDIF) is more than 1.4 times the factory default value.

### 12212 Laser power error

During bootup and routine processing, only error for the laser OK signal (LD1OKH, LD1OKL) is detected.

### 12272 Insufficient laser light intensity (1)

During routine processing, the laser light intensity is less than 50%, and the laser light intensity error signal (LD1OKL, LD1OKH) is detected (detail code: 004000).

Alternatively, the laser light intensity error signal (LD1OKL, LD1OKH) and laser drive current value (LDIF) error are detected (detail code: 014000).

### 12273 Laser life warning

During bootup and routine processing, the laser drive current value (LDIF) is more than 1.4 times the factory default value.

### 13208 Laser drive current error

During M-Utility operation, the laser drive current value (LDIF) is more than 1.4 times the factory default value.

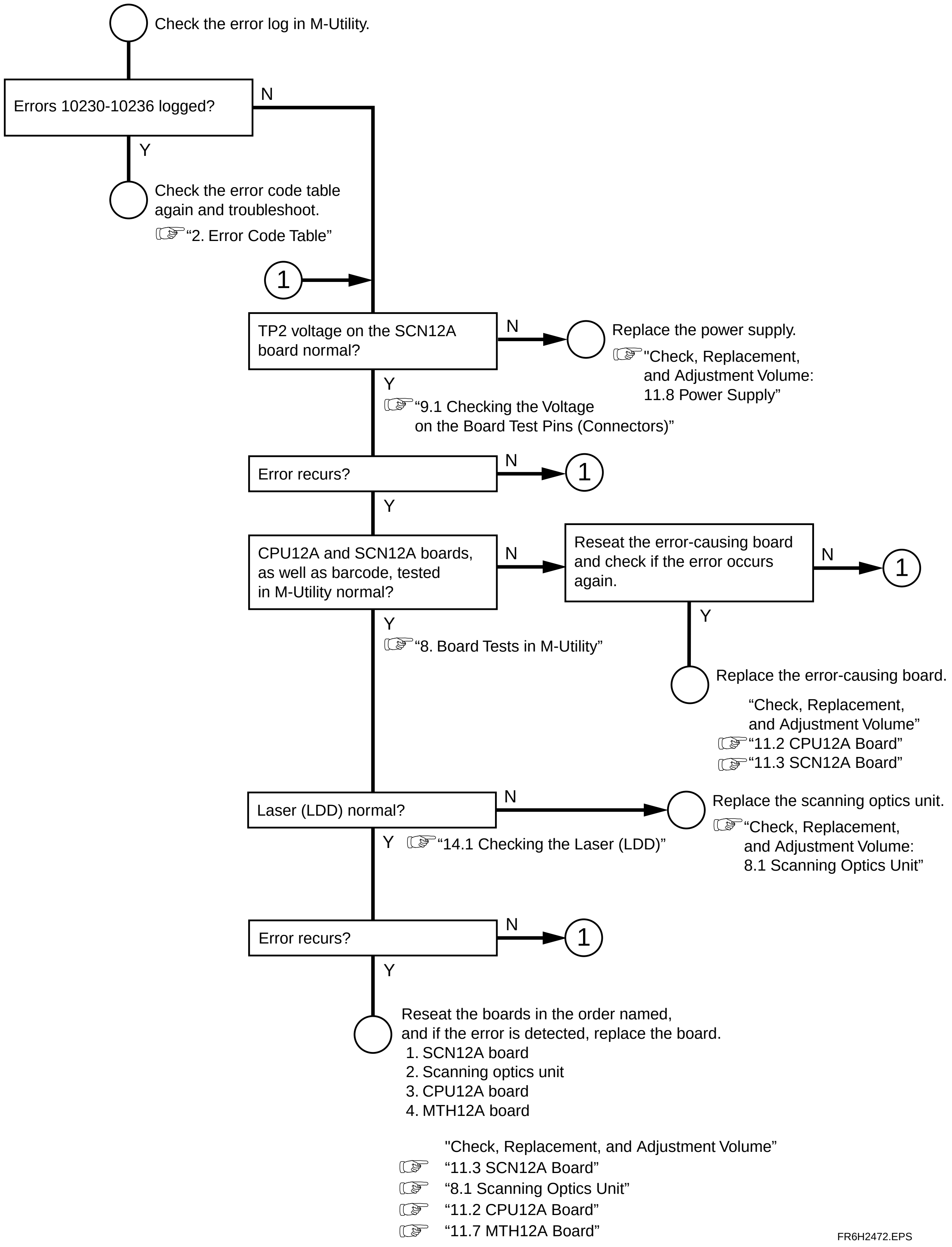
### 13212 Laser light intensity error

During M-Utility operation, only error for the laser OK signal (LD1OKH, LD1OKL) is detected.

### 14283 Scanning optics unit board error During bootup

During bootup, the laser (LDD), start-point detection (SYN), and leading-edge detection (SED) functions are disabled due to laser failure or disconnected connector (detail code: C05401).

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞“9.1 Checking the Voltage on the Board Test Pins (Connectors)”
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Y
☞“8. Board Tests in M-Utility”
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞“11.2 CPU12A Board”
☞“11.3 SCN12A Board”
Laser (LDD) normal?
N
Replace the scanning optics unit.
☞“Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit”
Y
☞“14.1 Checking the Laser (LDD)”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume”
☞ “11.3 SCN12A Board”
☞ “8.1 Scanning Optics Unit”
☞ “11.2 CPU12A Board”
☞ “11.7 MTH12A Board”
FR6H2472.EPS

# 12202, 12255, 13202

## ■ Error Occurrence Conditions

### 12202 Leading-edge detection error

During bootup and routine processing, only error for the leading-edge detection signal (SED1, SED2L) is detected.

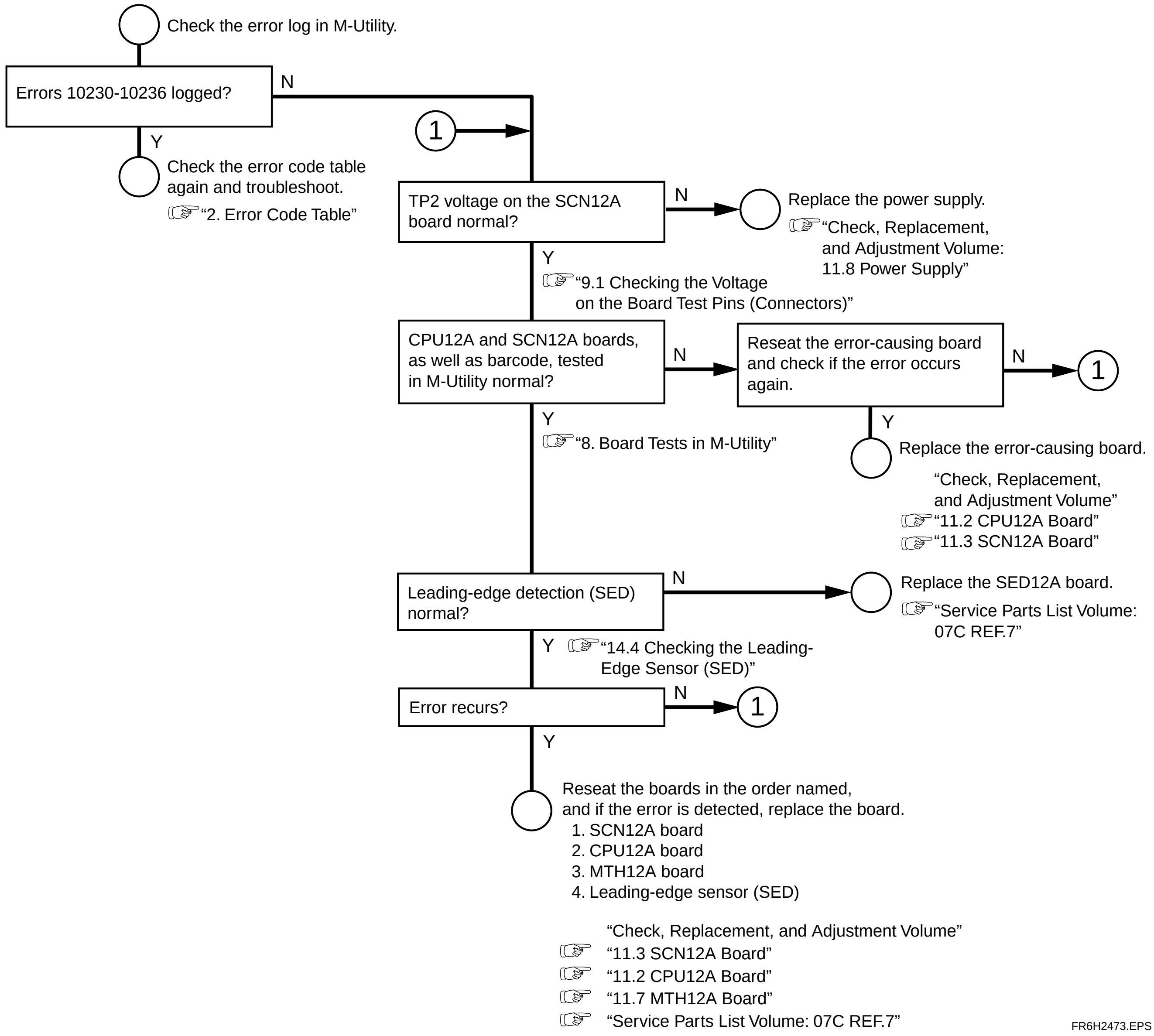
### 12255 Leading-edge detection error

During bootup, only error for the leading-edge detection signal (SED1, SED2L) is detected.

### 13202 Leading-edge detection error

During M-Utility operation, only error for the leading-edge detection signal (SED1, SED2L) is detected.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
Leading-edge detection (SED) normal?
N
Replace the SED12A board.
☞"Service Parts List Volume: 07C REF.7"
Y
☞"14.4 Checking the Leading-Edge Sensor (SED)"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. CPU12A board
3. MTH12A board
4. Leading-edge sensor (SED)
"Check, Replacement, and Adjustment Volume"
☞ "11.3 SCN12A Board"
☞ "11.2 CPU12A Board"
☞ "11.7 MTH12A Board"
☞ "Service Parts List Volume: 07C REF.7"
FR6H2473.EPS

# 12211, 12217, 12251, 12252, 13211, 13217, 14211, 14251

## ■ Error Occurrence Conditions

### 12211 PMT analog power supply error,

During bootup and routine processing, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected.5

### 12217 High-voltage power supply error

During bootup and routine processing, only error for the high-voltage power supply signal (HVOKH/L) is detected.

### 12251 Photomultiplier control board error (1)

During routine processing, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected (detail code: 008200).

Note that if the HV is OFF, the detail code is 008000.

### 12252 Photomultiplier control board error (2)

During routine processing, only error for the high-voltage power supply signal (HVOKH, HVOKL) is detected.

### 13211 PMT analog power supply error

During M-Utility operation, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected.

### 13217 High-voltage power supply error

During M-Utility operation, only error for the high-voltage power supply signal (HVOKH, HVOKL) is detected.

### 14211 PMT analog power supply error During bootup

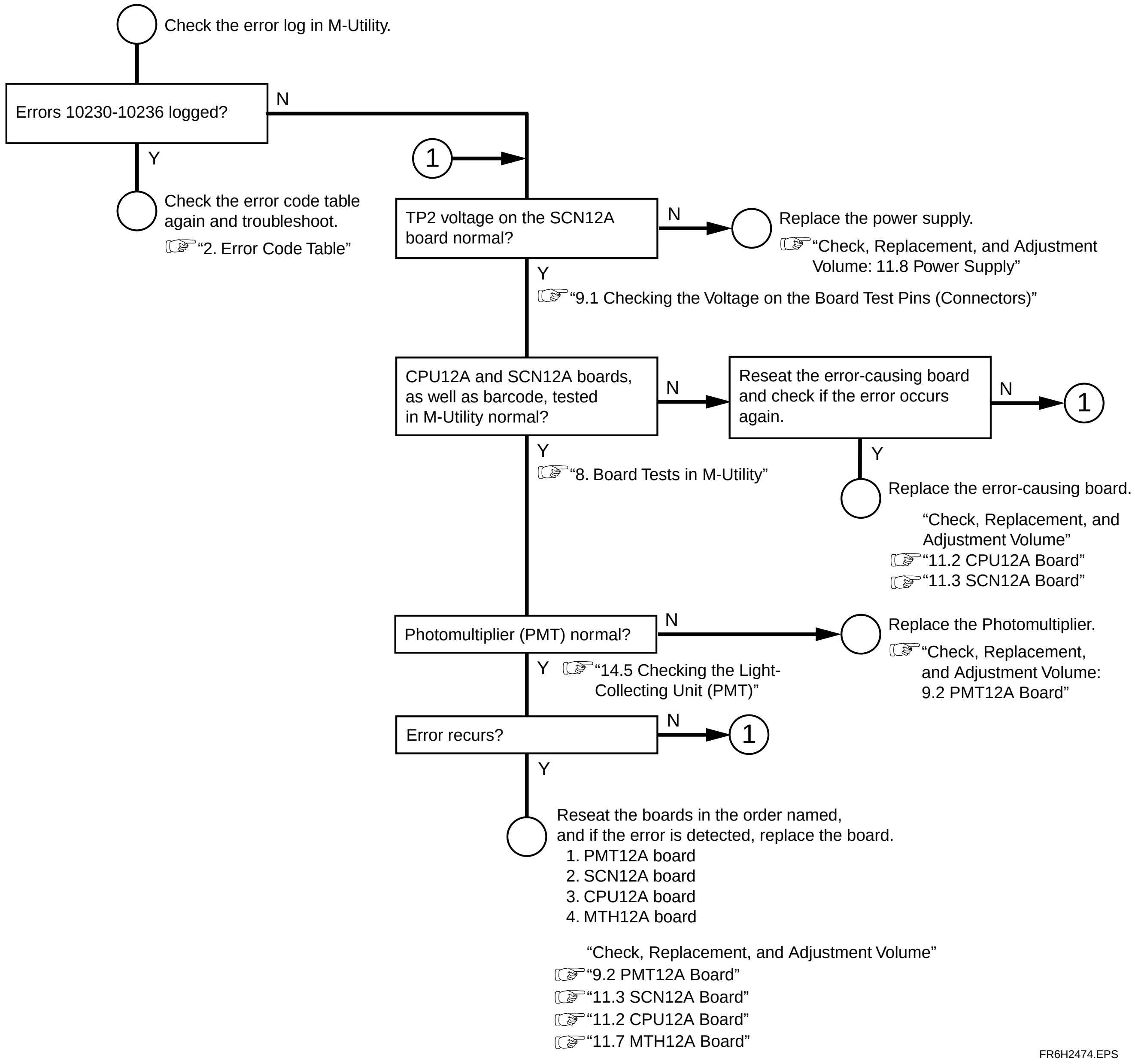
During bootup, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected.

### 14251 Photomultiplier control board error During bootup (1)

During routine processing, only error for the PMT analog power supply signal (+15VOKH, +15VOKL) is detected (detail code: 008200).

Note that if the HV is OFF, the detail code is 008000.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞“Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞“9.1 Checking the Voltage on the Board Test Pins (Connectors)”
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞“8. Board Tests in M-Utility”
Y
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞“11.2 CPU12A Board”
☞“11.3 SCN12A Board”
Photomultiplier (PMT) normal?
N
Replace the Photomultiplier.
☞“Check, Replacement, and Adjustment Volume: 9.2 PMT12A Board”
Y
☞“14.5 Checking the Light-Collecting Unit (PMT)”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. PMT12A board
2. SCN12A board
3. CPU12A board
4. MTH12A board
“Check, Replacement, and Adjustment Volume”
☞“9.2 PMT12A Board”
☞“11.3 SCN12A Board”
☞“11.2 CPU12A Board”
☞“11.7 MTH12A Board”
FR6H2474.EPS

# 10261, 12213, 12262, 12263, 12264, 13210, 14261

## ■ Error Occurrence Conditions

### 10261 Polygon rotation error (1)

During routine processing, error for the polygon lock signal (PONL, POKL) is detected so that the polygonal mirror function is disabled. The start-point detection (SYN) and leading-edge detection (SED) functions are also disabled (detail code: D03403).

### 12213 Polygon lock error

During bootup and routine processing, only error for the polygon lock signal (POKL, PONL) is detected.

### 12262 Polygon rotation error (2)

- During routine processing, error for the signals (PONL, POKL, PINDXL) from the polygonal mirror (POL) and the start-point interval function on the SCN12A board is detected (detail code: 003400).
- During routine processing, error for the polygon lock signal (PONL, POKL) and error for the start-point interval function and polygon rotation detection function on the SCN12A board are detected (detail code: 003400).

### 12263 Polygon rotation error (3)

During routine processing, only error for the lock signal (POKL, PONL) from the polygonal mirror (POL) is detected (detail code: 002000).

If error for the SEDTM or FCLKTM signal on the SCN12A board is detected, the detail code is 002003.

### 12264 Polygonal rotation error (4)

During routine processing, error for the signals (PONL, POKL, PINDXL) from the polygonal mirror and the SEDTM signal on the SCN12A board is detected (detail code: 001002).

Alternatively, error for the index signal (PINDXL) from the polygonal mirror and the SEDTM and FCLKTM signals on the SCN12A board is detected (detail code: 0010030).

Alternatively, error for the signals (POKL, PINDXL) from the polygonal mirror and the SEDTM signal on the SCN12A board is detected (error code: 001002).

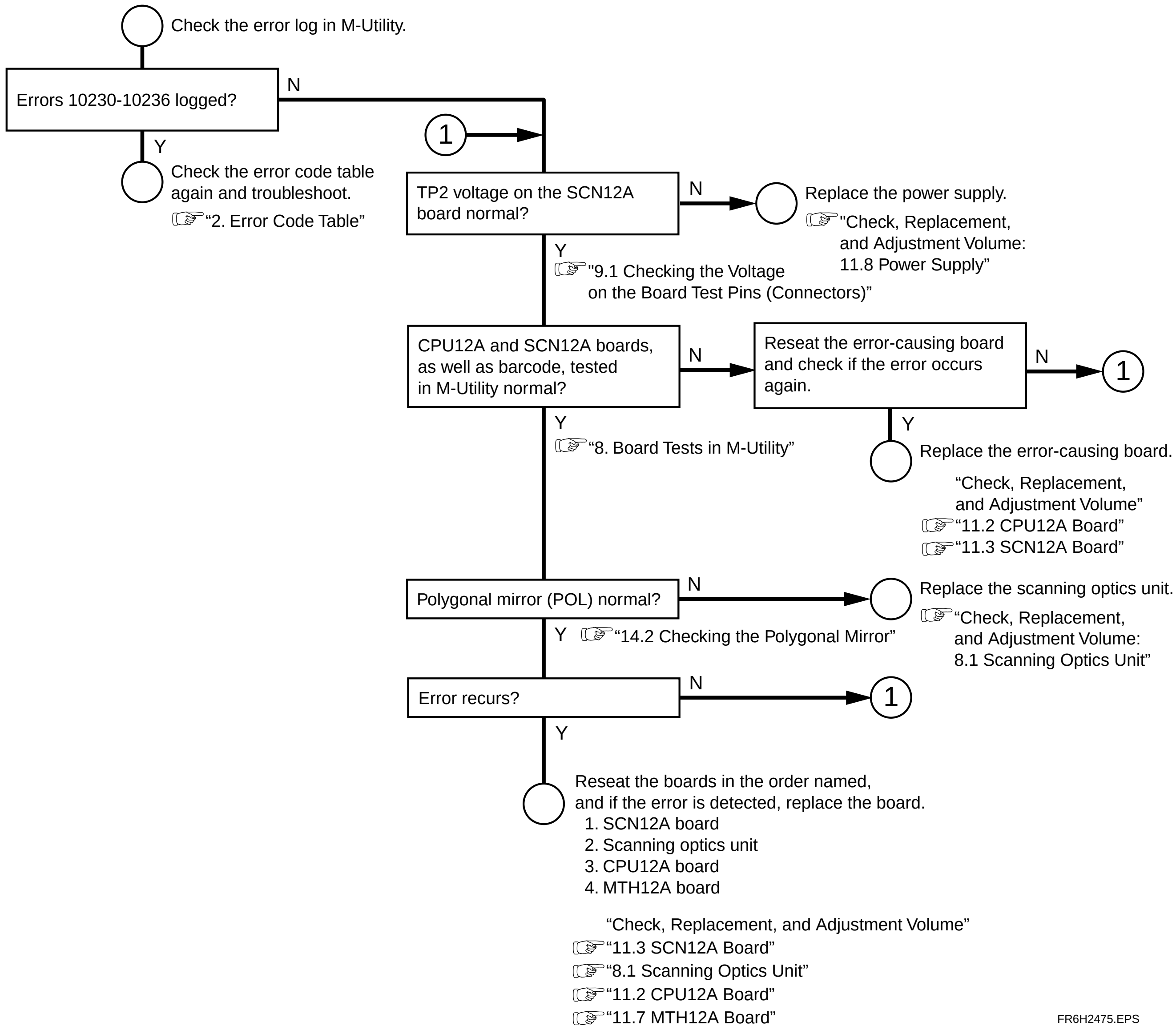
### 13210 Polygon lock timeout

During bootup and routine processing, the polygon OK signal is not detected within 6 seconds after turn-ON of the polygonal mirror.

### 14261 Polygon rotation error (1)

During bootup, error for the polygon lock signal (PONL, POKL) is detected so that the polygonal mirror function is disabled. The start-point detection (SYN) and leading-edge detection (SED) are also disabled (detail code: D03403).

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)”
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
“Check, Replacement, and Adjustment Volume”
☞“11.2 CPU12A Board”
☞“11.3 SCN12A Board”
Y
☞“8. Board Tests in M-Utility”
Polygonal mirror (POL) normal?
N
Replace the scanning optics unit.
☞“Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit”
Y
☞“14.2 Checking the Polygonal Mirror”
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
“Check, Replacement, and Adjustment Volume”
☞“11.3 SCN12A Board”
☞“8.1 Scanning Optics Unit”
☞“11.2 CPU12A Board”
☞“11.7 MTH12A Board”
FR6H2475.EPS

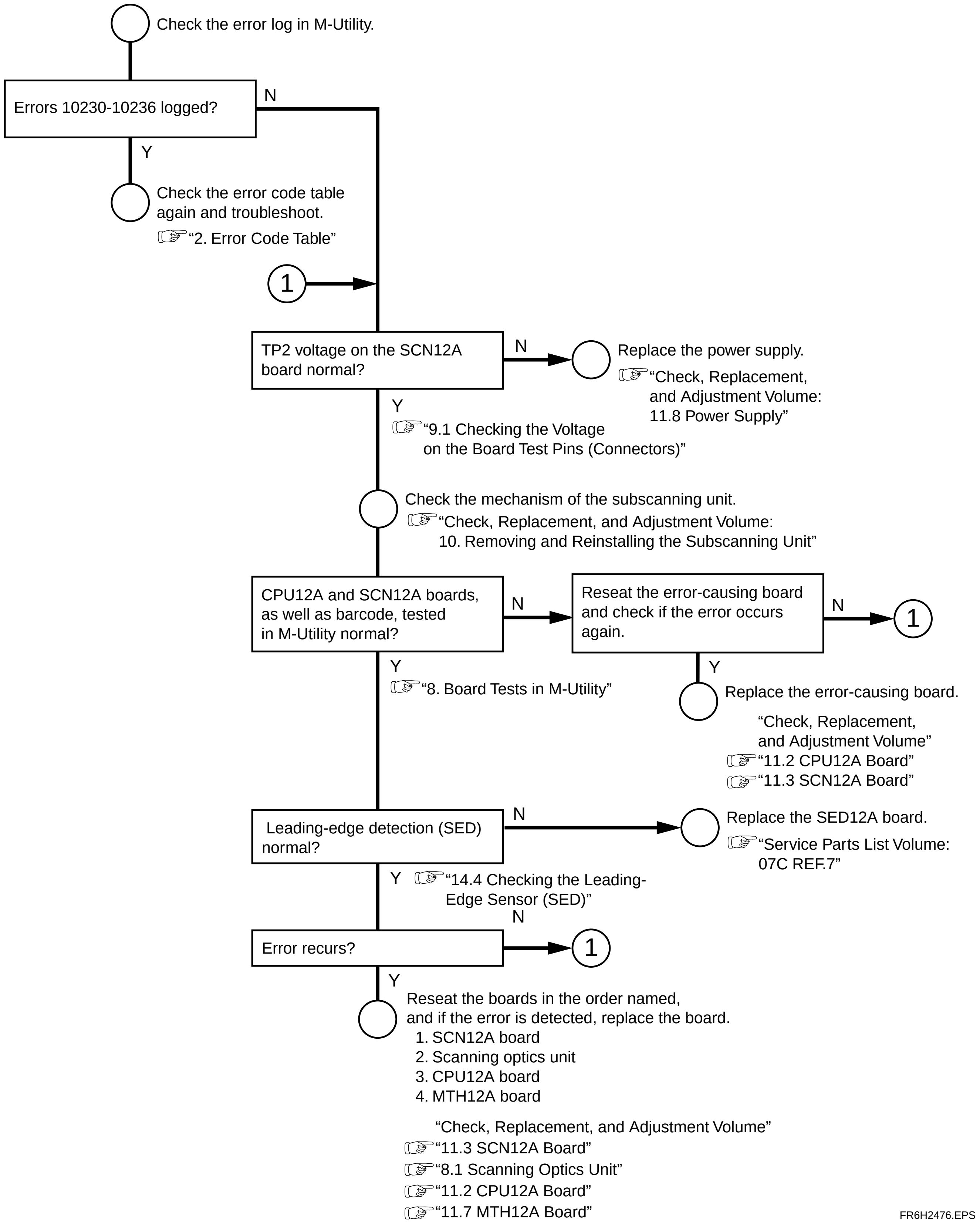
# 12256

## ■ Error Occurrence Conditions

### 12256 Leading-edge detection timing error

During routine processing, IP conveyance overrun occurs due to mechanical error or SCN12A board control error, and only error for the SEDTM and FCLKTM signals on the SCN12A board is detected.

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
TP2 voltage on the SCN12A board normal?
N
Replace the power supply.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Check the mechanism of the subscanning unit.
☞"Check, Replacement, and Adjustment Volume: 10. Removing and Reinstalling the Subscanning Unit"
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
Y
☞"8. Board Tests in M-Utility"
Leading-edge detection (SED) normal?
N
Replace the SED12A board.
☞"Service Parts List Volume: 07C REF.7"
Y
☞"14.4 Checking the Leading-Edge Sensor (SED)"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"8.1 Scanning Optics Unit"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2476.EPS

# 10271, 14271

## ■ Error Occurrence Conditions

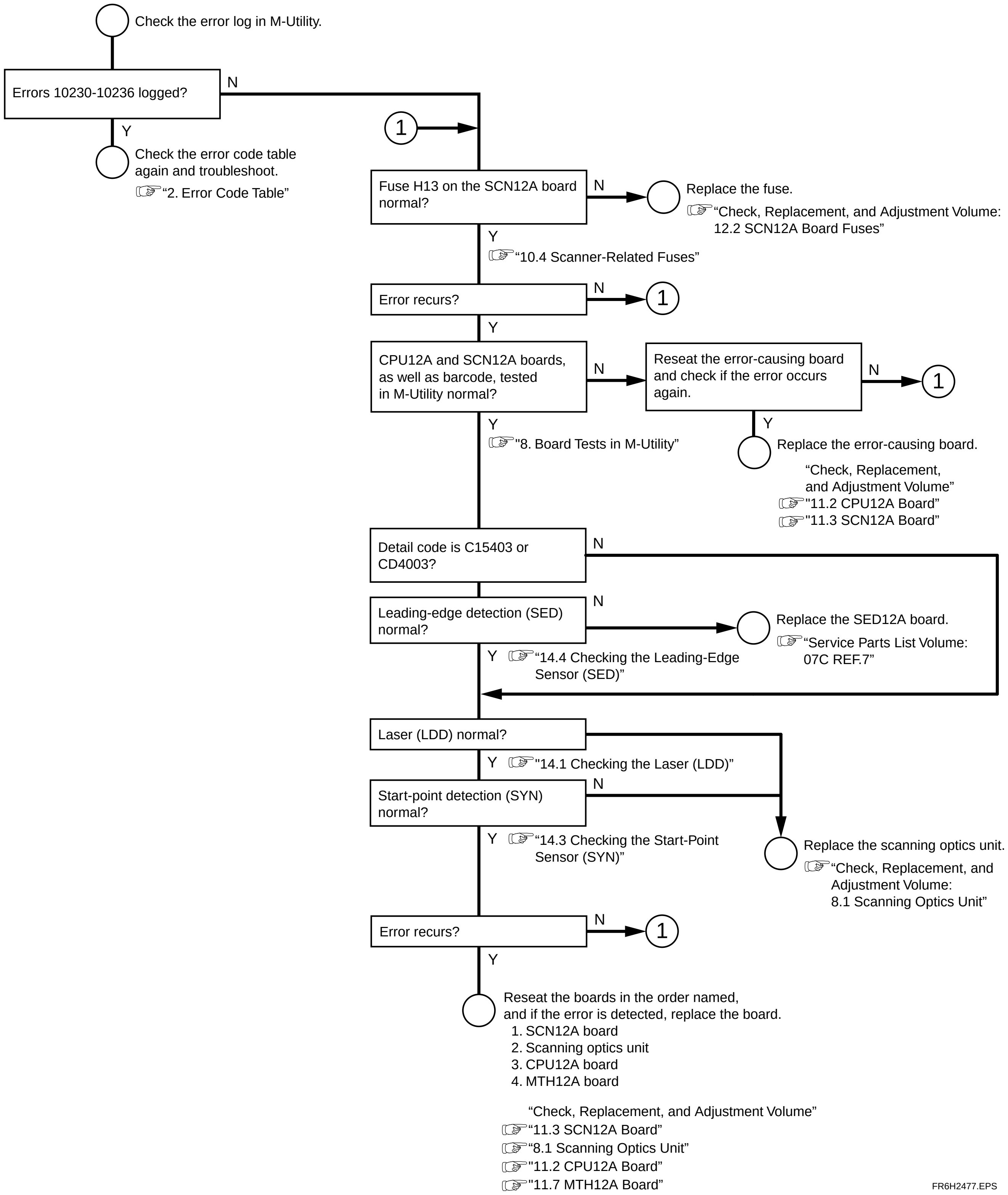
### 10271 Laser unlit error

During routine processing, the laser (LDD) and start-point detection (SYN) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: 815403).

### 14271 Laser unlit error during bootup

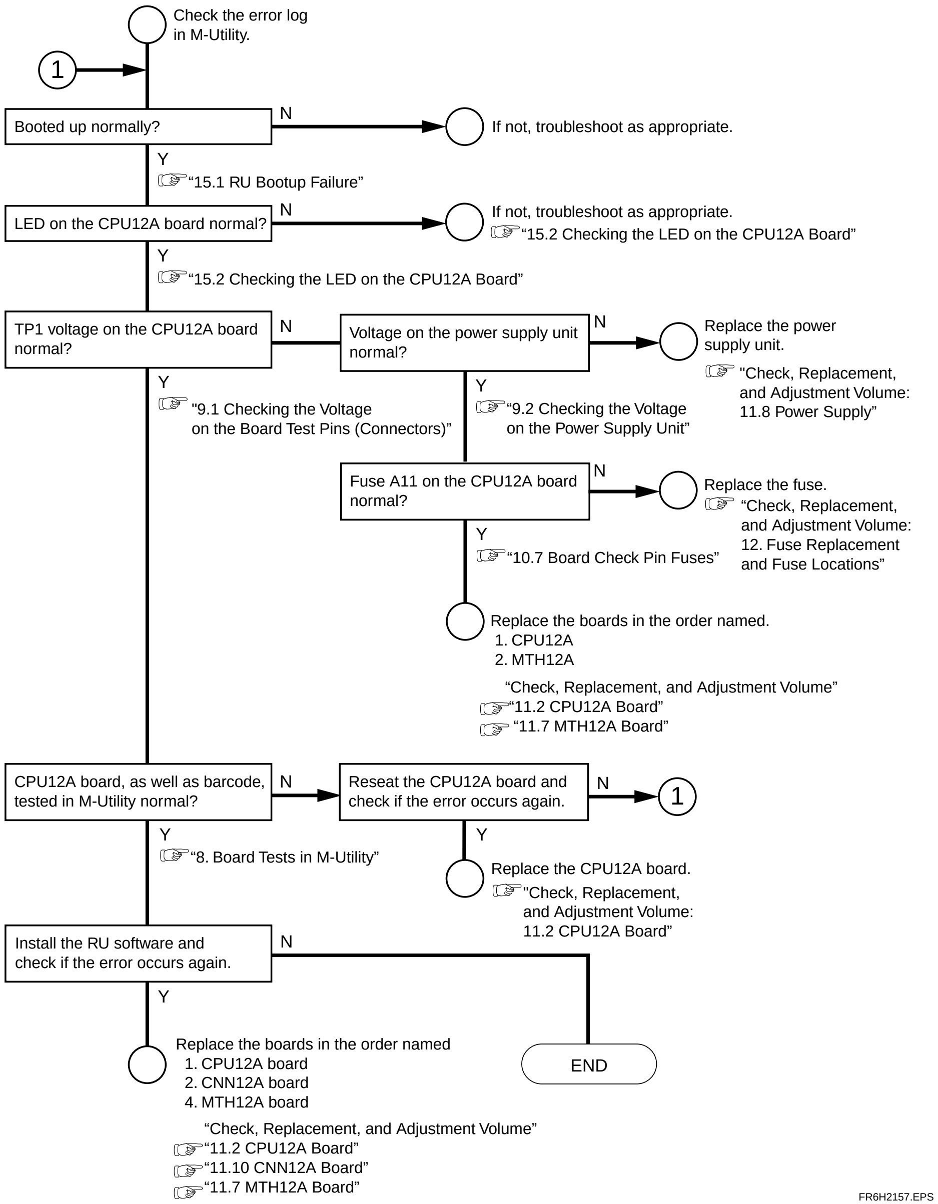
- During bootup, the laser (LDD) and start-point detection (SYN) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: 815403).
- During bootup, the laser (LDD), start-point detection (SYN), and leading-edge detection (SED) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: C15403).
- During bootup, error for the laser drive current value (LDIF) occurs and the start-point detection (SYN) and leading-edge detection (SED) functions are disabled due to blow of the fuse (H13 on the SCN board) or laser failure (detail code: C04003).

## ■ Analysis Flow


Check the error log in M-Utility.
Errors 10230-10236 logged?
N
Y
Check the error code table again and troubleshoot.
☞"2. Error Code Table"
1
Fuse H13 on the SCN12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Error recurs?
N
1
Y
CPU12A and SCN12A boards, as well as barcode, tested in M-Utility normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SCN12A Board"
Y
☞"8. Board Tests in M-Utility"
Detail code is C15403 or CD4003?
N
Leading-edge detection (SED) normal?
N
Replace the SED12A board.
☞"Service Parts List Volume: 07C REF.7"
Y
☞"14.4 Checking the Leading-Edge Sensor (SED)"
Laser (LDD) normal?
Y
☞"14.1 Checking the Laser (LDD)"
Start-point detection (SYN) normal?
N
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
Y
☞"14.3 Checking the Start-Point Sensor (SYN)"
Error recurs?
N
1
Y
Reseat the boards in the order named, and if the error is detected, replace the board.
1. SCN12A board
2. Scanning optics unit
3. CPU12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"8.1 Scanning Optics Unit"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2477.EPS

# 6. Error Code Analysis Flow (Electrical)

## 6.1 Error Code Analysis Flow between the CPU12A Board and CL


Check the error log
in M-Utility.
1
Booted up normally?
N
If not, troubleshoot as appropriate.
Y
☞"15.1 RU Bootup Failure"
LED on the CPU12A board normal?
N
If not, troubleshoot as appropriate.
☞"15.2 Checking the LED on the CPU12A Board"
Y
☞"15.2 Checking the LED on the CPU12A Board"
TP1 voltage on the CPU12A board normal?
N
Voltage on the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Fuse A11 on the CPU12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞"10.7 Board Check Pin Fuses"
Replace the boards in the order named.
1. CPU12A
2. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
CPU12A board, as well as barcode, tested in M-Utility normal?
N
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the CPU12A board.
☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"
Install the RU software and check if the error occurs again.
N
Y
Replace the boards in the order named
1. CPU12A board
2. CNN12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.10 CNN12A Board"
☞"11.7 MTH12A Board"
END

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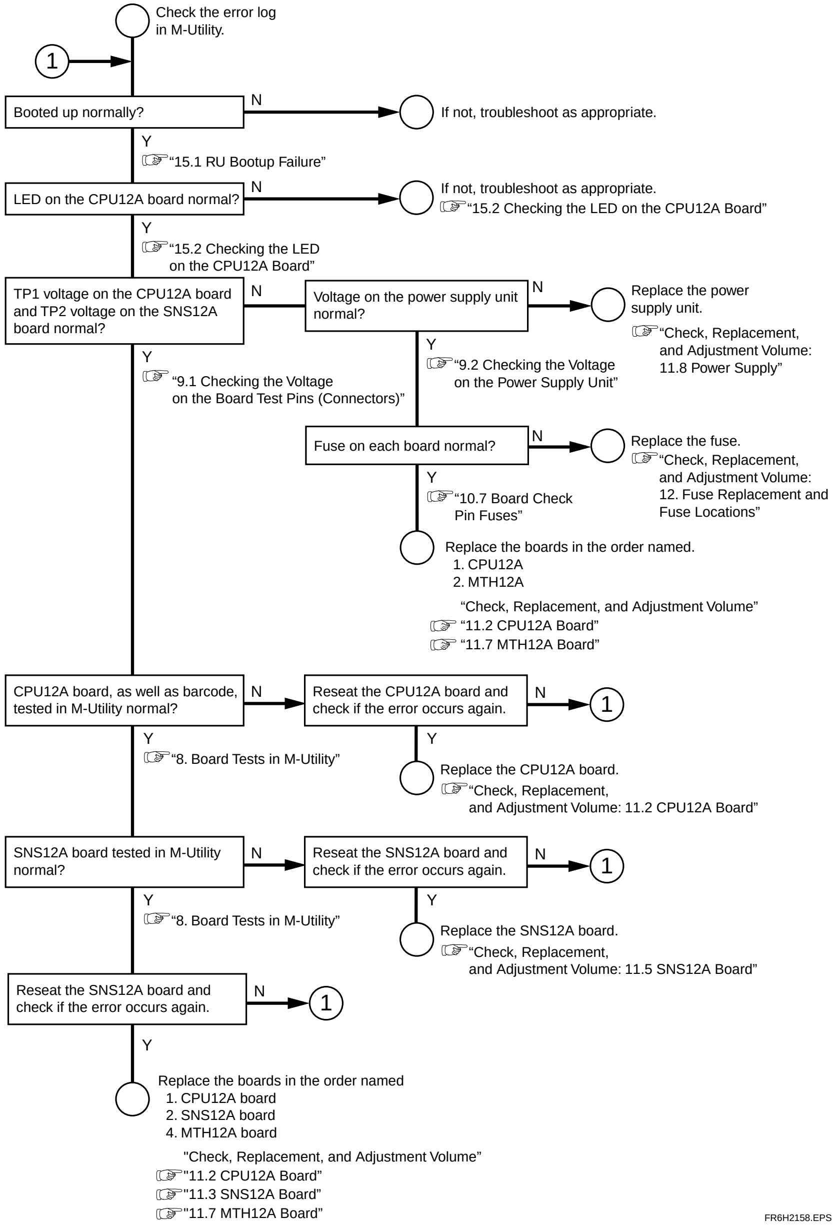
## 6.2 Error Code Analysis Flow between the SNS12A Board and CPU12A Board


Check the error log
in M-Utility.
1
Booted up normally?
N
If not, troubleshoot as appropriate.
Y
☞"15.1 RU Bootup Failure"
LED on the CPU12A board normal?
N
If not, troubleshoot as appropriate.
☞"15.2 Checking the LED on the CPU12A Board"
Y
☞"15.2 Checking the LED on the CPU12A Board"
TP1 voltage on the CPU12A board and TP2 voltage on the SNS12A board normal?
N
Voltage on the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Fuse on each board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞"10.7 Board Check Pin Fuses"
Replace the boards in the order named.
1. CPU12A
2. MTH12A
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
CPU12A board, as well as barcode, tested in M-Utility normal?
N
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the CPU12A board.
☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"
SNS12A board tested in M-Utility normal?
N
Reseat the SNS12A board and check if the error occurs again.
N
1
Y
☞"8. Board Tests in M-Utility"
Y
Replace the SNS12A board.
☞"Check, Replacement, and Adjustment Volume: 11.5 SNS12A Board"
Reseat the SNS12A board and check if the error occurs again.
N
1
Y
Replace the boards in the order named
1. CPU12A board
2. SNS12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SNS12A Board"
☞"11.7 MTH12A Board"

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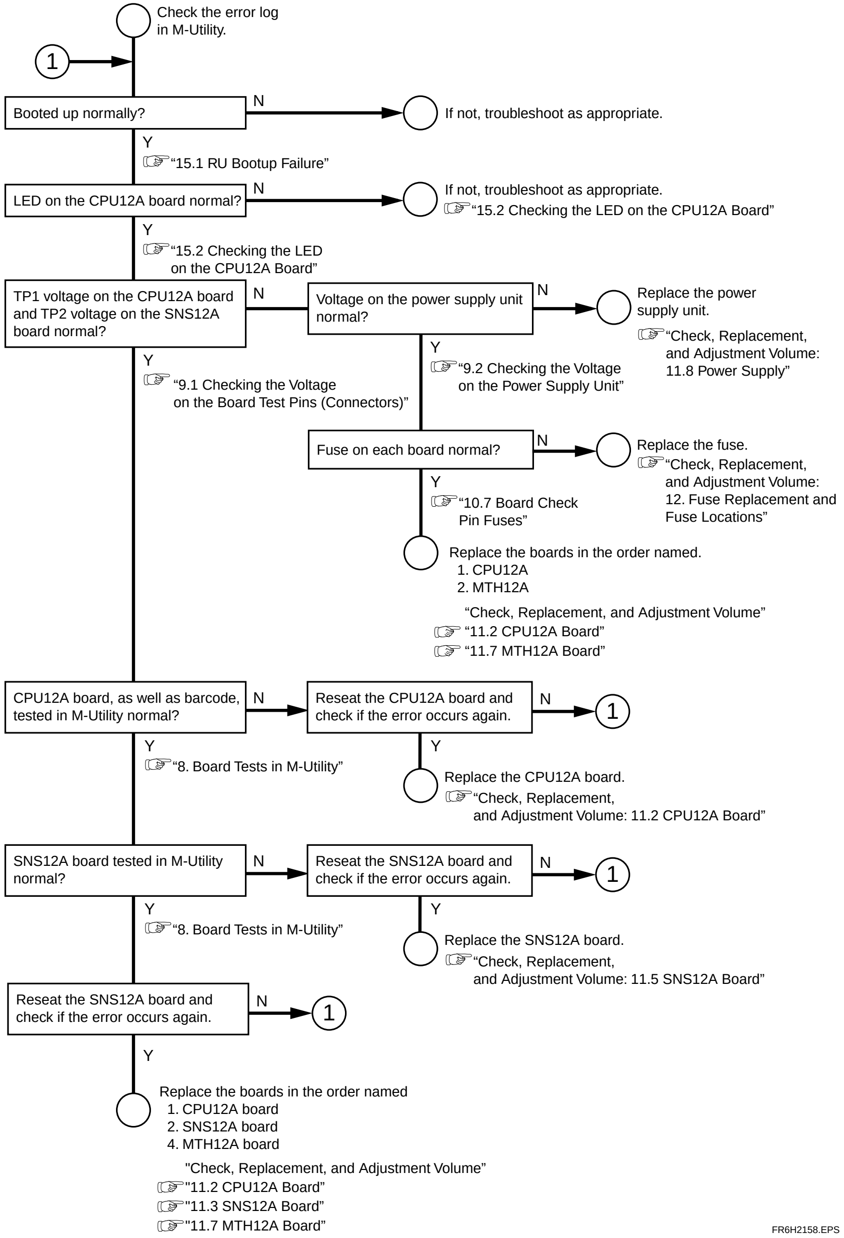
## 6.3 Error Code Analysis Flow between the SCN12A Board and CPU12A Board


Check the error log in M-Utility.
1
Booted up normally?
N
If not, troubleshoot as appropriate.
Y
☞"15.1 RU Bootup Failure"
LED on the CPU12A board normal?
N
If not, troubleshoot as appropriate.
☞"15.2 Checking the LED on the CPU12A Board"
Y
☞"15.2 Checking the LED on the CPU12A Board"
TP1 voltage on the CPU12A board and TP2 voltage on the SNS12A board normal?
N
Voltage on the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Y
☞ "9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Fuse on each board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞"10.7 Board Check Pin Fuses"
Replace the boards in the order named.
1. CPU12A
2. MTH12A
"Check, Replacement, and Adjustment Volume"
☞ "11.2 CPU12A Board"
☞ "11.7 MTH12A Board"
CPU12A board, as well as barcode, tested in M-Utility normal?
N
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
Replace the CPU12A board.
☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"
Y
☞"8. Board Tests in M-Utility"
SNS12A board tested in M-Utility normal?
N
Reseat the SNS12A board and check if the error occurs again.
N
1
Y
Replace the SNS12A board.
☞"Check, Replacement, and Adjustment Volume: 11.5 SNS12A Board"
Y
☞"8. Board Tests in M-Utility"
Reseat the SNS12A board and check if the error occurs again.
N
1
Y
Replace the boards in the order named
1. CPU12A board
2. SNS12A board
4. MTH12A board
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.3 SNS12A Board"
☞"11.7 MTH12A Board"
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# 6.4 Error Code Analysis Flow between the Erasure Unit and INV12B Board

## 11731, 11751, 11781

### ■ Error Occurrence Conditions

**11731 Thermistor failure detection (during erasure initialization)**

During bootup, it is detected that temperature control of the erasure unit does not function due to temperature thermistor (THB1) error.

**11751 Thermistor failure detection (during IP processing)**

During routine processing, error for the temperature thermistor (THB1) is detected.

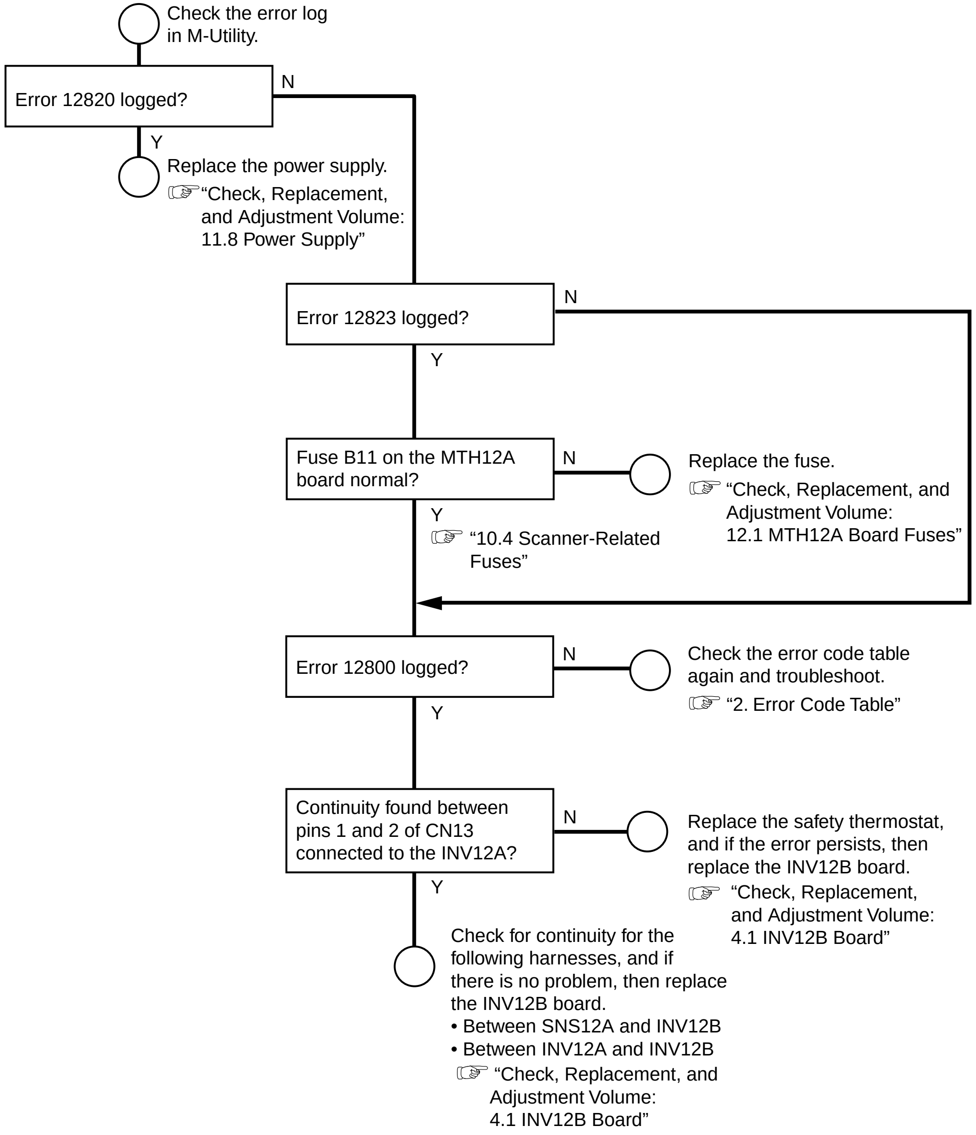
**11781 Thermistor failure detection (during idling)**

During idling after machine bootup, error for the temperature thermistor (THB1) is detected.

### ■ Analysis Flow

After checking the LED display on the INV12B board, analysis should be performed by using the analysis flow that corresponds to the resulting LED display.

- INV12B LED display - ON: LED14, LED15
  OFF: LED16, LED17, LED18



Check the error log in M-Utility.
Error 12820 logged?
N
Y
Replace the power supply.
☞“Check, Replacement, and Adjustment Volume: 11.8 Power Supply”
Error 12823 logged?
N
Y
Fuse B11 on the MTH12A board normal?
N
Replace the fuse.
☞“Check, Replacement, and Adjustment Volume: 12.1 MTH12A Board Fuses”
Y
☞“10.4 Scanner-Related Fuses”
Error 12800 logged?
N
Check the error code table again and troubleshoot.
☞“2. Error Code Table”
Y
Continuity found between pins 1 and 2 of CN13 connected to the INV12A?
N
Replace the safety thermostat, and if the error persists, then replace the INV12B board.
☞“Check, Replacement, and Adjustment Volume: 4.1 INV12B Board”
Y
Check for continuity for the following harnesses, and if there is no problem, then replace the INV12B board.
• Between SNS12A and INV12B
• Between INV12A and INV12B
☞“Check, Replacement, and Adjustment Volume: 4.1 INV12B Board”

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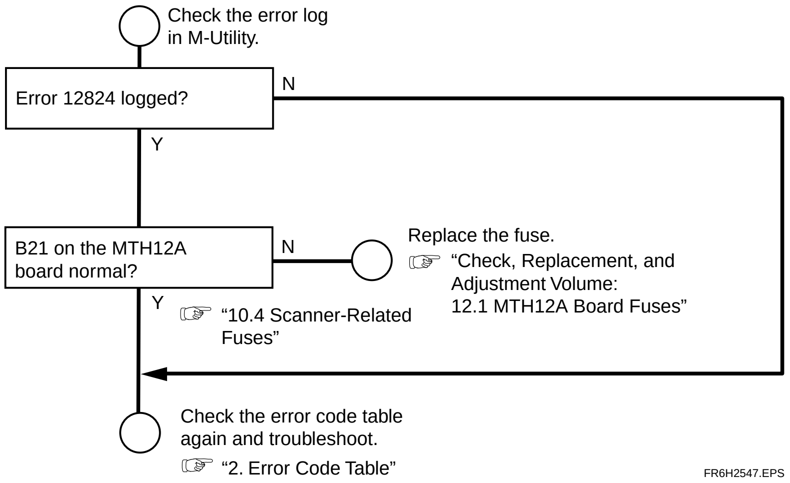
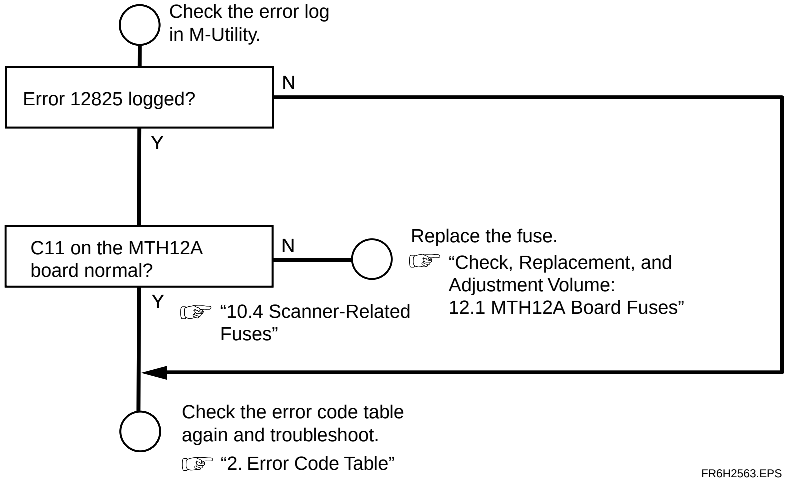
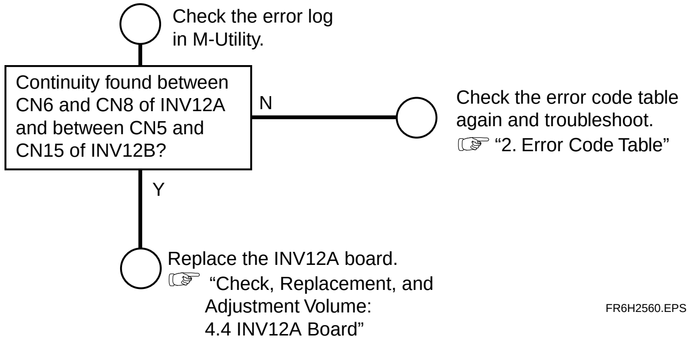
- INV12B LED display - ON: LED14, LED15, LED16
  OFF: LED17, LED18


Check the error log
in M-Utility.
Error 12824 logged?
N
Y
B21 on the MTH12A
board normal?
N
Replace the fuse.
☞ "Check, Replacement, and
Adjustment Volume:
12.1 MTH12A Board Fuses"
Y
☞ "10.4 Scanner-Related
Fuses"
Check the error code table
again and troubleshoot.
☞ "2. Error Code Table"
FR6H2547.EPS

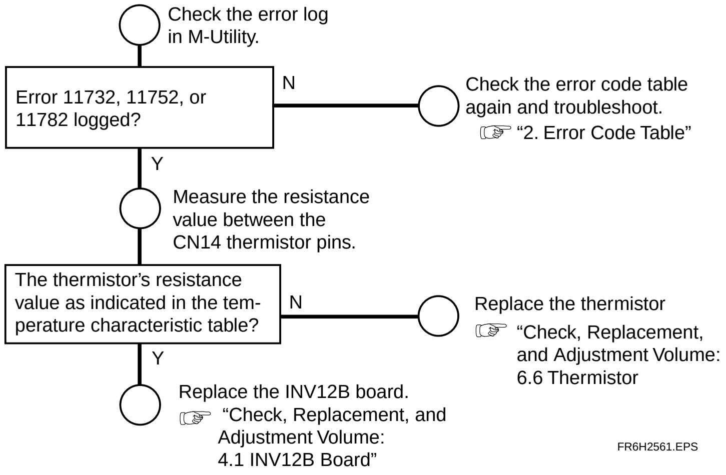
- INV12B LED display - ON: LED14, LED15, LED16, LED17
  OFF: LED18


Check the error log
in M-Utility.
Error 12825 logged?
N
Y
C11 on the MTH12A
board normal?
N
Replace the fuse.
☞ "Check, Replacement, and
Adjustment Volume:
12.1 MTH12A Board Fuses"
Y
☞ "10.4 Scanner-Related
Fuses"
Check the error code table
again and troubleshoot.
☞ "2. Error Code Table"
FR6H2563.EPS

- INV12B LED display - ON: LED14, LED15, LED17, LED18
  OFF: LED16


Check the error log
in M-Utility.
Continuity found between
CN6 and CN8 of INV12A
and between CN5 and
CN15 of INV12B?
N
Check the error code table
again and troubleshoot.
☞ "2. Error Code Table"
Y
Replace the INV12A board.
☞ "Check, Replacement, and
Adjustment Volume:
4.4 INV12A Board"
FR6H2560.EPS

- INV12B LED display - ON: LED14, LED16, LED17, LED18
  OFF: LED15


Check the error log
in M-Utility.
Error 11732, 11752, or
11782 logged?
N
Check the error code table
again and troubleshoot.
☞ "2. Error Code Table"
Y
Measure the resistance
value between the
CN14 thermistor pins.
The thermistor's resistance
value as indicated in the tem-
perature characteristic table?
N
Replace the thermistor
☞ "Check, Replacement,
and Adjustment Volume:
6.6 Thermistor
Y
Replace the INV12B board.
☞ "Check, Replacement, and
Adjustment Volume:
4.1 INV12B Board"
FR6H2561.EPS

## 11732, 11752, 11782

### ■ Error Occurrence Conditions

**11732 Thermistor status error detection (during erasure initialization)**

During bootup, the temperature thermistor (THB1) detects an abnormal range. Temperature control of the erasure unit does not function.

**11752 Erasure unit temperature status inconsistency (during IP processing)**

During routine processing, error for the temperature status (LED: D15, D11, D10, D13) in the erasure unit is detected. Temperature control of the erasure unit is disabled.

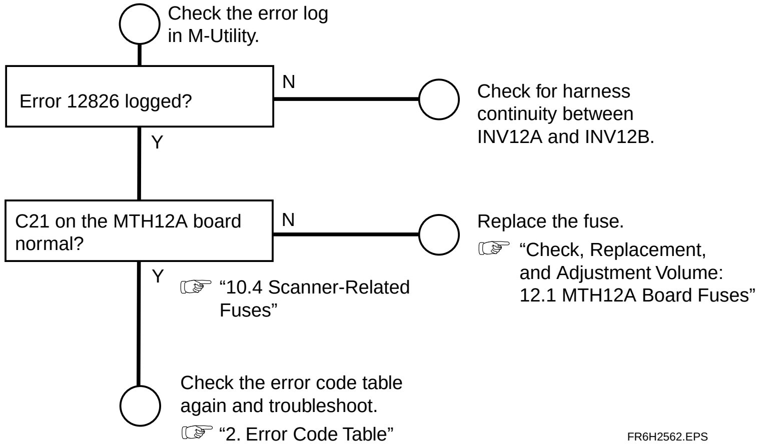
**11782 Erasure unit temperature status inconsistency (during idling)**

During bootup, error for the temperature status (LED: D15, D11, D10, D13) in the erasure unit is detected. Temperature control of the erasure unit is disabled.

### ■ Analysis Flow

After checking the LED display on the INV12B board, analysis should be performed by using the analysis flow that corresponds to the resulting LED display.

- INV12B LED display - OFF: LED14, LED15, LED16, LED17, LED18


Check the error log
in M-Utility.
Error 12826 logged?
N
Check for harness continuity between INV12A and INV12B.
Y
C21 on the MTH12A board normal?
N
Replace the fuse.
☞ "Check, Replacement, and Adjustment Volume: 12.1 MTH12A Board Fuses"
Y
☞ "10.4 Scanner-Related Fuses"
Check the error code table again and troubleshoot.
☞ "2. Error Code Table"

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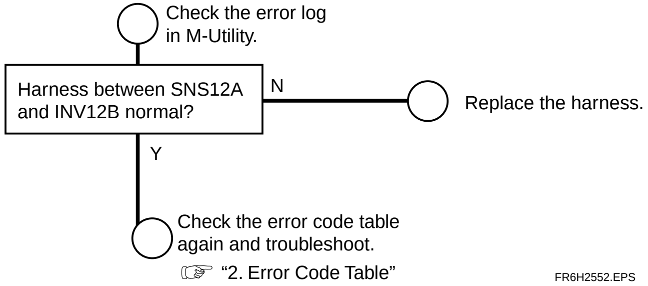
- INV12B LED display - ON: LED14, LED15, LED16, LED17, LED18


Check the error log
in M-Utility.
Harness between SNS12A and INV12B normal?
N
Replace the harness.
Y
Check the error code table again and troubleshoot.
☞ "2. Error Code Table"

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- INV12B LED display - ON: LED16, LED17, LED18
  OFF: LED14, LED15

Replace the INV12B board.

☞ "Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"

- INV12B LED display - ON: LED16, LED18
  OFF: LED14, LED15, LED17

Replace the INV12A board.

☞ "Check, Replacement, and Adjustment Volume: 4.4 INV12A Board"

- INV12B LED display - ON: LED16, LED17
  OFF: LED14, LED15, LED18

Replace the INV12A board.

☞ "Check, Replacement, and Adjustment Volume: 4.4 INV12A Board"

## 11737, 11757, 11767

### ■ Error Occurrence Conditions

**11737 Lamp unlit detection (during erasure initialization)**

During bootup, the erasure lamps are tuned on to check their lighting, but a single center lamp (socket L2) of the three erasure lamps is unlit. Or, two or more erasure lamps are unlit.

**11757 Lamp unlit detection (during erasure idle temperature control)**

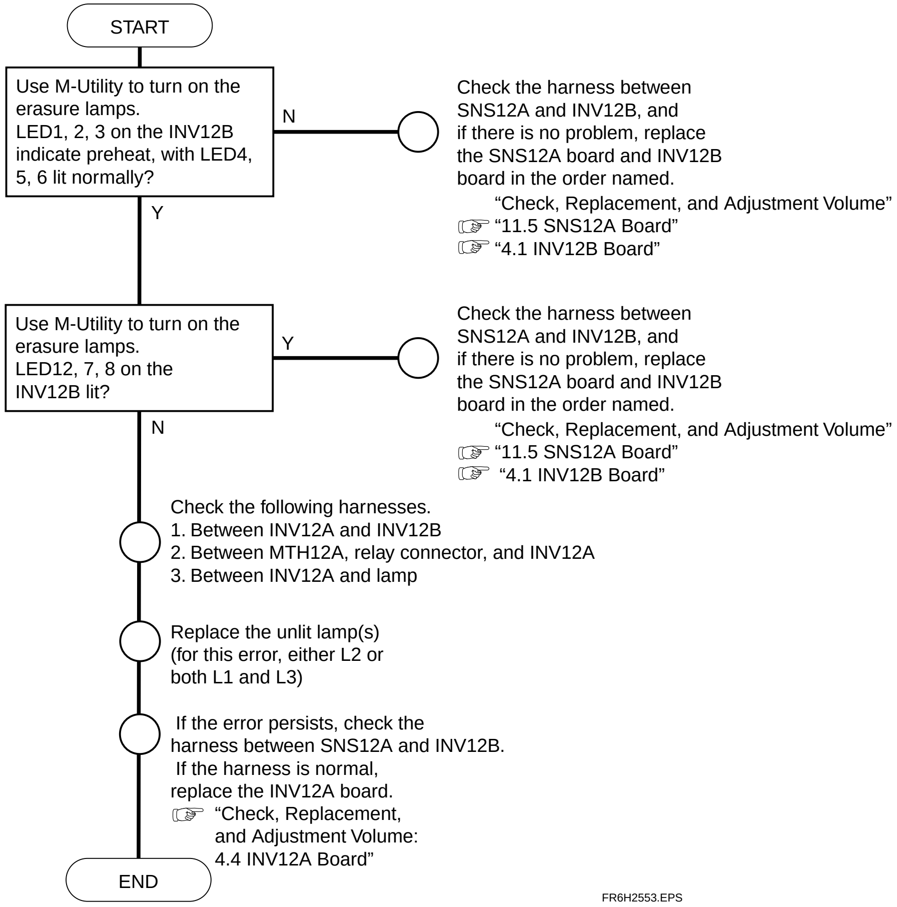
During machine idle state, in order to perform erasure temperature control, the erasure lamps are turned on to check their lighting, but a single center lamp (socket L2) of the three erasure lamps is unlit. Or, two or more erasure lamps are unlit.

**11767 Lamp unlit detection (during IP erasure lighting)**

During IP erasure for routine processing, the erasure lamps are turned on to check their lighting, but a single center lamp (socket L2) of the three erasure lamps is unlit. Or, two or more erasure lamps are unlit.

### ■ Analysis Flow

● INV12B LED display - ON: LED14, LED15, LED16, LED17, LED18



Use M-Utility to turn on the erasure lamps.
LED1, 2, 3 on the INV12B indicate preheat, with LED4, 5, 6 lit normally?

Check the harness between SNS12A and INV12B, and if there is no problem, replace the SNS12A board and INV12B board in the order named.
“Check, Replacement, and Adjustment Volume”
☞ “11.5 SNS12A Board”
☞ “4.1 INV12B Board”

Use M-Utility to turn on the erasure lamps.
LED12, 7, 8 on the INV12B lit?

Check the harness between SNS12A and INV12B, and if there is no problem, replace the SNS12A board and INV12B board in the order named.
“Check, Replacement, and Adjustment Volume”
☞ “11.5 SNS12A Board”
☞ “4.1 INV12B Board”

Check the following harnesses.
1. Between INV12A and INV12B
2. Between MTH12A, relay connector, and INV12A
3. Between INV12A and lamp

Replace the unlit lamp(s) (for this error, either L2 or both L1 and L3)

If the error persists, check the harness between SNS12A and INV12B.
If the harness is normal, replace the INV12A board.
☞ “Check, Replacement, and Adjustment Volume: 4.4 INV12A Board”

FR6H2553.EPS

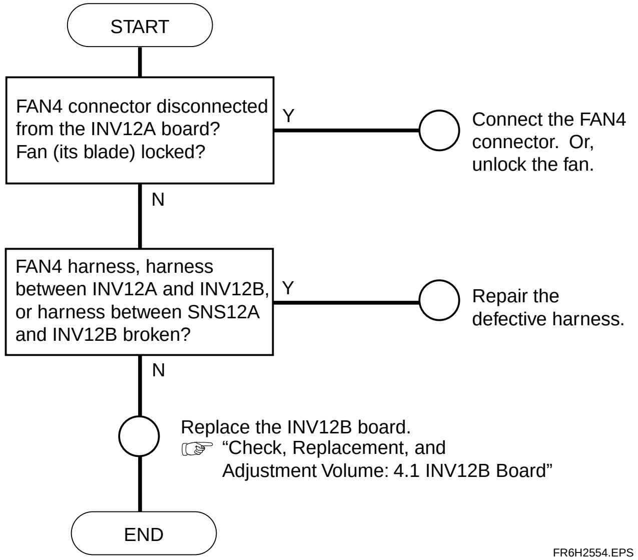
## 12730

### ■ Error Occurrence Conditions

**12730 Inverter cooling fa operation error (during erasure initialization)**

During bootup, error for the FAN4 (inverter board cooling fan) is detected, but it is activated as usual

### ■ Analysis Flow


START
FAN4 connector disconnected from the INV12A board? Fan (its blade) locked?
Y
Connect the FAN4 connector. Or, unlock the fan.
N
FAN4 harness, harness between INV12A and INV12B, or harness between SNS12A and INV12B broken?
Y
Repair the defective harness.
N
Replace the INV12B board.
☞ "Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"
END
FR6H2554.EPS

## 12733, 12743, 12753

### ■ Error Occurrence Conditions

**12733 High-temperature error detection (during erasure initialization)**

During bootup, the temperature thermistor (THB1) detects high-temperature error.

**12743 Erasure unit high-temperature error cancel**

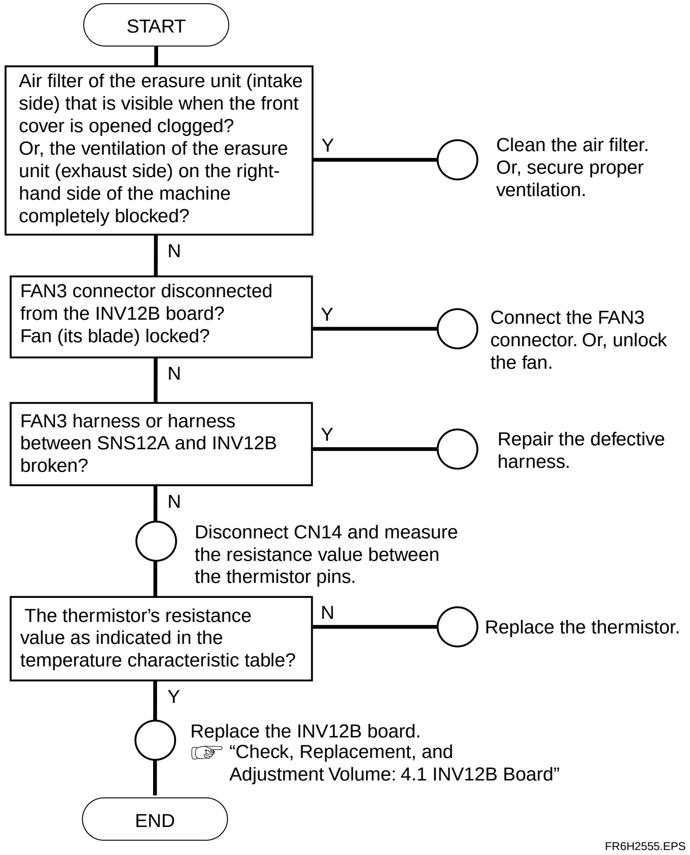
During bootup and routine processing, 12733 or 12753 occurs and the temperature of the erasure unit lamp reaches an abnormal level, so that the no-erasure mode is temporarily entered.

Subsequently, because the erasure lamp temperature drops below the specified level (erasure-enabled temperature), it returns to the normal mode.

**12753 Erasure unit high-temperature error**

During routine processing and idling, the temperature thermistor (THB1) detects high-temperature error.

### ■ Analysis Flow


START
Air filter of the erasure unit (intake side) that is visible when the front cover is opened clogged? Or, the ventilation of the erasure unit (exhaust side) on the right-hand side of the machine completely blocked?
Y
Clean the air filter. Or, secure proper ventilation.
N
FAN3 connector disconnected from the INV12B board? Fan (its blade) locked?
Y
Connect the FAN3 connector. Or, unlock the fan.
N
FAN3 harness or harness between SNS12A and INV12B broken?
Y
Repair the defective harness.
N
Disconnect CN14 and measure the resistance value between the thermistor pins.
The thermistor's resistance value as indicated in the temperature characteristic table?
N
Replace the thermistor.
Y
Replace the INV12B board.
☞ "Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"
END
FR6H2555.EPS

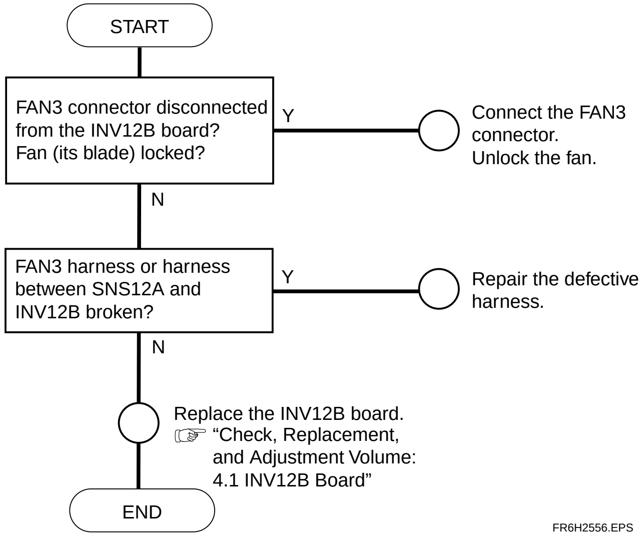
## 12735

### ■ Error Occurrence Conditions

**12735 Erasure cooling fan diagnostics error (during erasure initialization)**

During bootup, error for the FAN3 (erasure unit lamp house cooling fan) is detected, but only a warning is recorded, and fan control continues as usual.

### ■ Analysis Flow


START
FAN3 connector disconnected from the INV12B board?
Fan (its blade) locked?
Y
Connect the FAN3 connector.
Unlock the fan.
N
FAN3 harness or harness between SNS12A and INV12B broken?
Y
Repair the defective harness.
N
Replace the INV12B board.
☞ "Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"
END
FR6H2556.EPS

## 12736, 12756, 12766, 18741

### ■ Error Occurrence Conditions

**12736 Single lamp unlit detection (during erasure initialization)**

During bootup, because one of the three lamps is unlit, the machine is booted up in the mode where the erasure time is extended.

**12756 Single lamp unlit detection(during erasure idle temperature control)**

During idling, when the erasure lamps are turned on for erasure temperature control, a single lamp that is normally lit does not turn on, so that it enters the erasure time extension mode.

**12766 Single lamp unlit detection (during IP erasure lighting)**

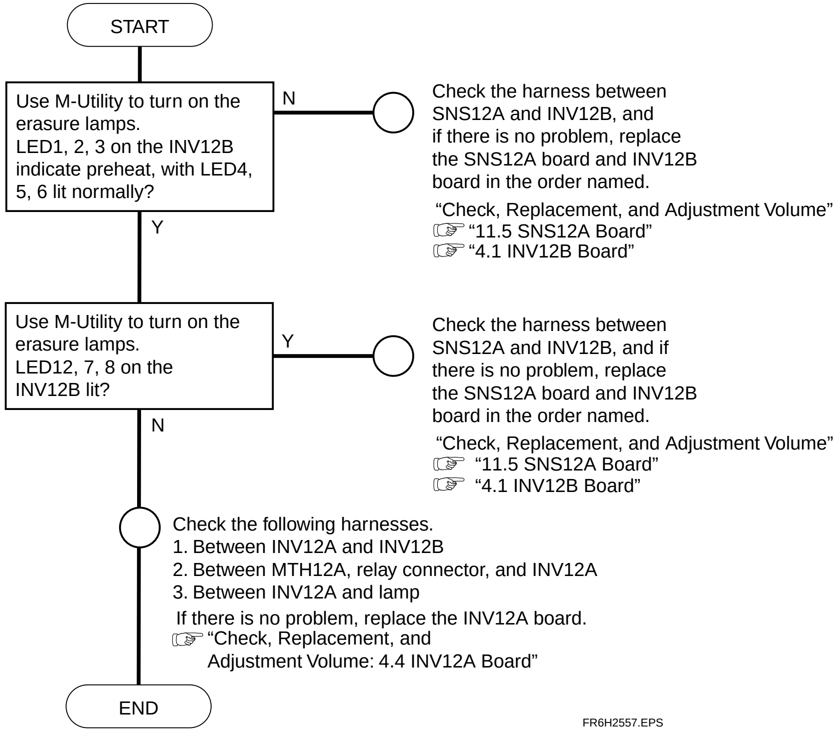
During bootup and routine processing, when the erasure lamps are turned on during IP erasure, a single lamp is unlit, so that it enters the erasure time extension mode.

**18741 Incomplete erasure**

Because 12736, 12756, or 12766 occurs so that a single lamp is unlit, the mode shifts to the erasure time extension mode where the erasure time is extended twice. The IP that is read while in the erasure time extension mode is erased with the extended erasure time.

### ■ Analysis Flow

- INV12B LED display - ON: LED14, LED15, LED16, LED17, LED18



Use M-Utility to turn on the erasure lamps.
LED1, 2, 3 on the INV12B indicate preheat, with LED4, 5, 6 lit normally?

Check the harness between SNS12A and INV12B, and if there is no problem, replace the SNS12A board and INV12B board in the order named.
“Check, Replacement, and Adjustment Volume”
☞ “11.5 SNS12A Board”
☞ “4.1 INV12B Board”

Use M-Utility to turn on the erasure lamps.
LED12, 7, 8 on the INV12B lit?

Check the harness between SNS12A and INV12B, and if there is no problem, replace the SNS12A board and INV12B board in the order named.
“Check, Replacement, and Adjustment Volume”
☞ “11.5 SNS12A Board”
☞ “4.1 INV12B Board”

Check the following harnesses.
1. Between INV12A and INV12B
2. Between MTH12A, relay connector, and INV12A
3. Between INV12A and lamp
If there is no problem, replace the INV12A board.
☞ “Check, Replacement, and Adjustment Volume: 4.4 INV12A Board”

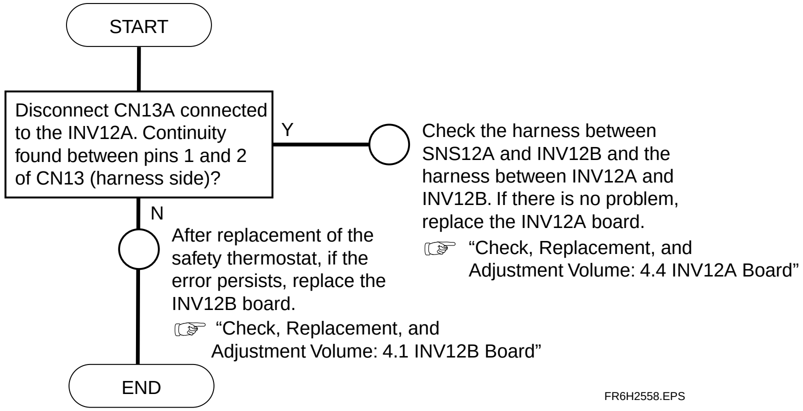
# 12800

## ■ Error Occurrence Conditions

### 12800 Erasure unit safety thermostat TSWB1 operation

During bootup and routine processing, because the erasure unit lamp housing reaches an abnormally high temperature, the safety thermostat TSWB1 is activated.

## ■ Analysis Flow



Disconnect CN13A connected to the INV12A. Continuity found between pins 1 and 2 of CN13 (harness side)?

Y: Check the harness between SNS12A and INV12B and the harness between INV12A and INV12B. If there is no problem, replace the INV12A board.

☞ "Check, Replacement, and Adjustment Volume: 4.4 INV12A Board"

N: After replacement of the safety thermostat, if the error persists, replace the INV12B board.

☞ "Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"

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# 7. Error Code Analysis Flow (Software)

## 7.1 Initializing the Configuration Setup (A04 or Later)

This section describes the procedures for temporarily initializing the configuration setup related to the RU network.

Note, however, that this initialization setup will be canceled by resetting the RU.

**CAUTIONS**

*Before initialization, make sure that any machine having the RU host name of "ru0" does not exist over the same network. Also make sure that any machine that uses the default setting for its IP address does not exist.*
*If it is used, power OFF the machine that has the RU host name of "ru0" or the machine that uses the default setting for its IP address.*
*If the configuration setup is initialized under power-ON condition, the machine that has the RU host name of "ru0" or the machine that uses the default setting for its IP address will undergo automatic installation and thus will be initialized.*

**◇ REFERENCE ◇**

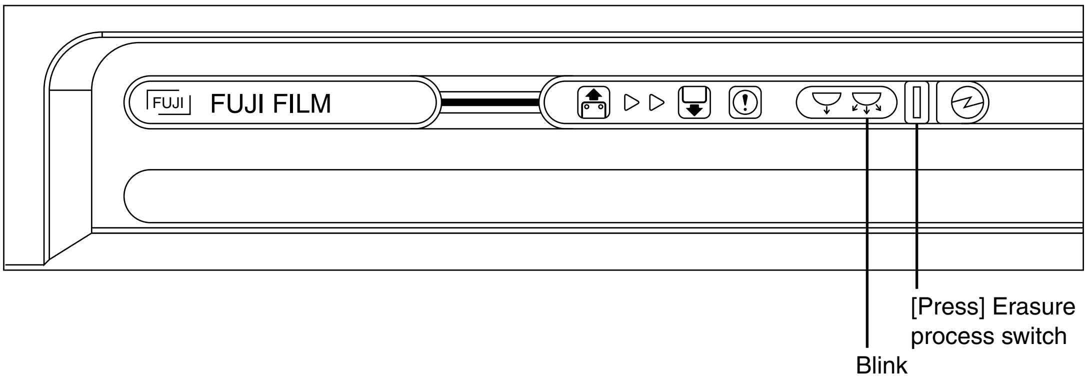
*The default values of the IP address are as follows.*

- *RU IP ADDR: 172.16.1.10*
- *CL IP ADDR: 172.16.1.20*
- *FTP-SERV.: 172.16.1.20*
- *INFO-HOST: 172.16.1.20*

## ■ Initializing the Network-Related Configuration Setup

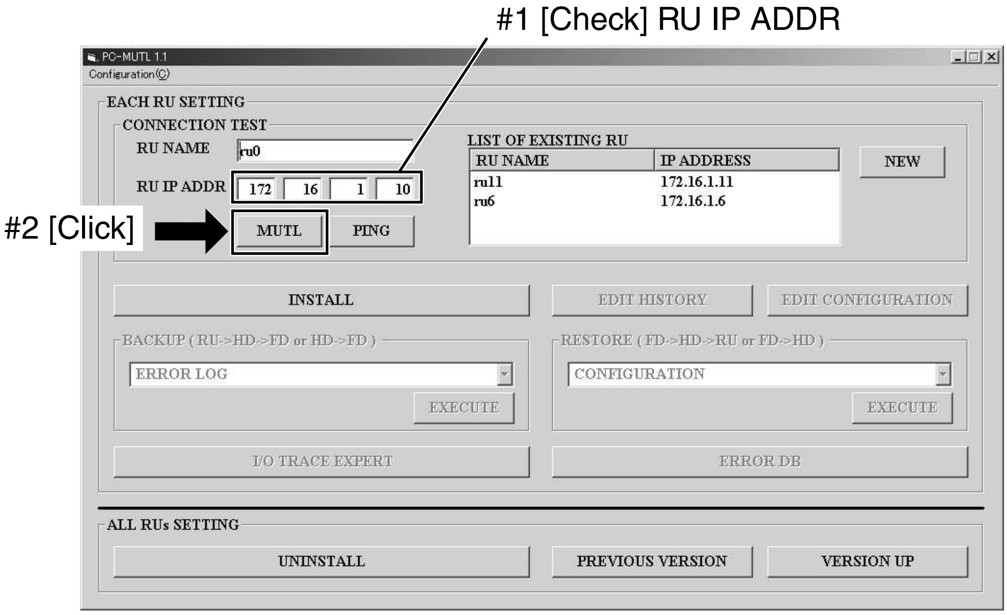
(1) Make sure that any machine that uses “ru0” as its RU host name or uses the default setting for its IP address does not exist over the same network.

(2) Turn OFF and then back ON the power switch of the RU, and, at the same time, hold down the erasure process switch until the erasure process indicator blinks (once).


FUJI
FUJI FILM
[Press] Erasure process switch
Blink

FR6H2542.EPS

(3) Make sure that the IP address of the RU is at its default, and then start the M-Utility.
If it is not at its default, enter the default value, and then start the M-Utility.


#1 [Check] RU IP ADDR
#2 [Click]
PC-MUTL 1.1
Configuration(C)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME ru0

RU IP ADDR 172 16 1 10

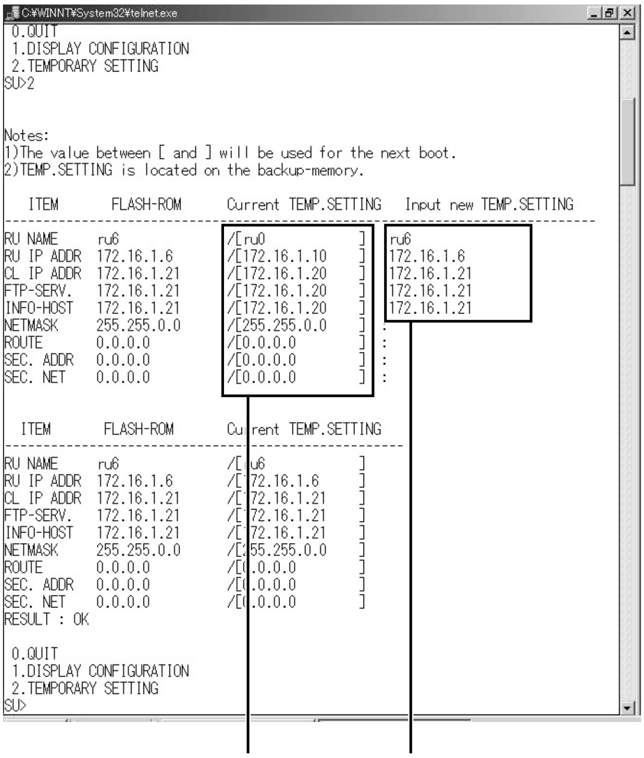
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru11 | 172.16.1.11 |
| ru6 | 172.16.1.6 |

FR6H2543.EPS

(4) Using TEMPORARY SETTING of the M-Utility, verify that initialization has been done.

(5) With TEMPORARY SETTING of the M-Utility, enter the temporary setting values employed by the user.

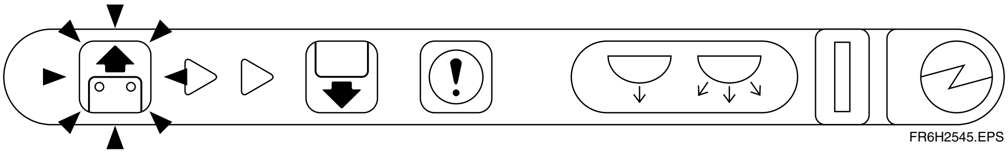


C:¥WINNT¥System32¥telnet.exe

```
 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>2


Notes:
1)The value between [ and ] will be used for the next boot.
2)TEMP.SETTING is located on the backup-memory.

   ITEM       FLASH-ROM       Current TEMP.SETTING   Input new TEMP.SETTING
----------------------------------------------------------------------------
RU NAME      ru6              /[ru0              ]  ru6
RU IP ADDR   172.16.1.6       /[172.16.1.10      ]  172.16.1.6
CL IP ADDR   172.16.1.21      /[172.16.1.20      ]  172.16.1.21
FTP-SERV.    172.16.1.21      /[172.16.1.20      ]  172.16.1.21
INFO-HOST    172.16.1.21      /[172.16.1.20      ]  172.16.1.21
NETMASK      255.255.0.0      /[255.255.0.0      ] :
ROUTE        0.0.0.0          /[0.0.0.0          ] :
SEC. ADDR    0.0.0.0          /[0.0.0.0          ] :
SEC. NET     0.0.0.0          /[0.0.0.0          ] :


  ITEM       FLASH-ROM       Current TEMP.SETTING
-------------------------------------------------
RU NAME      ru6              /[ru6              ]
RU IP ADDR   172.16.1.6       /[172.16.1.6       ]
CL IP ADDR   172.16.1.21      /[172.16.1.21      ]
FTP-SERV.    172.16.1.21      /[172.16.1.21      ]
INFO-HOST    172.16.1.21      /[172.16.1.21      ]
NETMASK      255.255.0.0      /[255.255.0.0      ]
ROUTE        0.0.0.0          /[0.0.0.0          ]
SEC. ADDR    0.0.0.0          /[0.0.0.0          ]
SEC. NET     0.0.0.0          /[0.0.0.0          ]
RESULT : OK

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>
```

FR6H2544.EPS

(6) Power OFF and then back ON the RU and verify that the cassette loading lamp of the RU is illuminated.



◆ **INSTRUCTION** ◆

*If no connection is established between the CL and RU even after the procedures described above are performed, the IP addresses of the CL and RU should be checked.*

## 7.2 Action to be Taken When the RU Application Software is Damaged

This section describes the procedures for updating the application software if the RU application software is corrupted or damaged (the M-Utility cannot be started).

**CAUTIONS**

- *If you can start the M-Utility (i.e., you can log in), then the procedure should not be performed.*
  *If the procedure has been inadvertently performed while you can start the M-Utility, then the CPU12A board should be replaced.*

- *Make sure that devices that are set as shown below are not connected over the same network:*

  *"Device where 'ru0' is used as the RU host name"*
  *"Device where the IP address is used by its default setting"*

  *If any such device as described above is connected over the same network, disconnect that device from the same network by powering it OFF or unplugging its I/F cable.*
  *Unless such a device is disconnected, the application and configuration data of that device will be automatically updated as well when the application of the RU is updated.*

**◇ REFERENCE ◇**

*By performing "soft up date", the application software and configuration data of the FTP server are overwritten, and the software and data so changed are written into the FLASH ROM.*

### ■ Procedure To Be Taken When the RU Application Software Is Damaged

(1) Make sure that devices that are set as shown below are not connected over the same network:

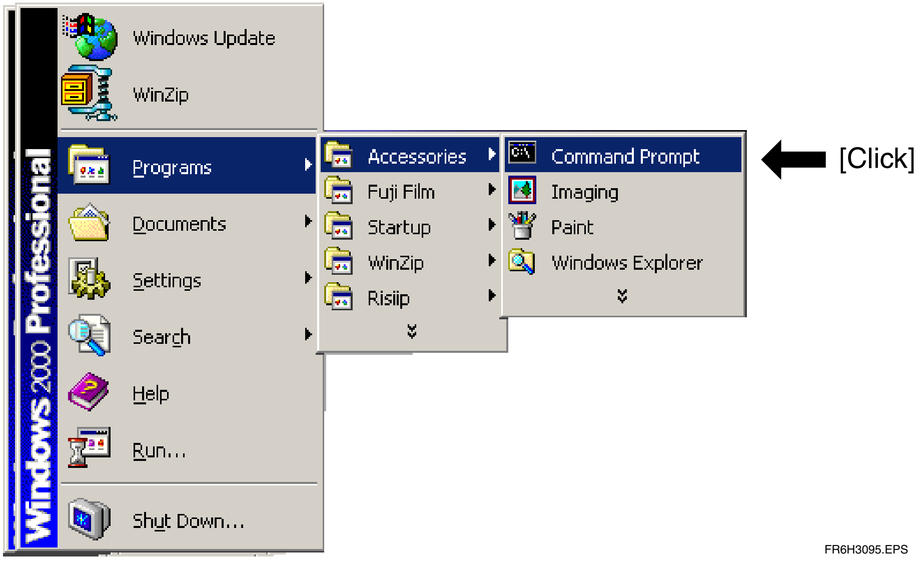
- Device where 'ru0' is used as the RU host name
- Device where the IP address is used by its default setting

➪ If any such device is connected over the same network, disconnect that device from the same network by powering it OFF or unplugging its I/F cable.

(2) Set the IP address of the CL to "172.16.1.20" (default value).

☞ "7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)" in Troubleshooting Volume

(3) From the [Start] menu of the CL, open Command Prompt.


Windows 2000 Professional
Windows Update
WinZip
Programs
Documents
Settings
Search
Help
Run...
Shut Down...
Accessories
Fuji Film
Startup
WinZip
Risiip
Command Prompt
Imaging
Paint
Windows Explorer
[Click]
FR6H3095.EPS

"c:\>" appears on screen.

(4) Enter the IP address of the RU, "telnet 172.16.1.10" (default value).

"Vx works" appears.

(5) Type in "cr-ir346".

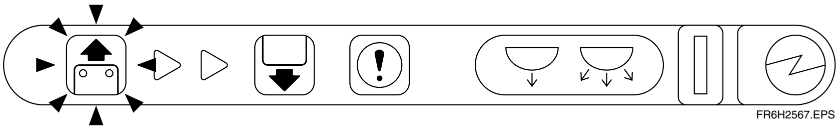
"Password:" appears on screen.

(6) Type in "cr-ir346".

"->" appears on screen.

(7) Type in "softupdate".

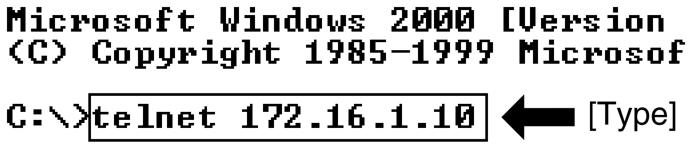
The indicators on the RU panel are all illuminated for about two minutes.


FR6H2567.EPS

### ◇ REFERENCES ◇

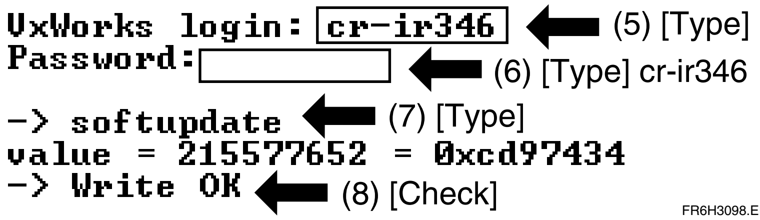
- *By executing "softupdate", the application software and configuration data of the FTP server are overwritten into the application software and configuration data of the FLASH ROM. (Step (7))*
- *Once the configuration data is overwritten, the IP address of the RU is changed to the user setting. Thus, it is necessary to change the IP address of the CL to the user setting. (Step (10, 11))*

(8) Make sure that “Write OK” appears.



```
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-1999 Microsoft Corp.

C:\>telnet 172.16.1.10
```

FR6H3097.EPS



```
VxWorks login: cr-ir346
Password:

-> softupdate
value = 215577652 = 0xcd97434
-> Write OK
```

FR6H3098.EPS

(9) Power OFF the RU and back ON.

(10) Using TEMPORARY SETTING of SOFTWARE UTILITY, change the setting to the user setting.

☞ “11.2 Replacing the CPU12A Board, [4] Change the CL (IP address/NET MASK), ■ Changing the CL (IP Address/NET MASK) (from Default Setting to User Setting) (2)”

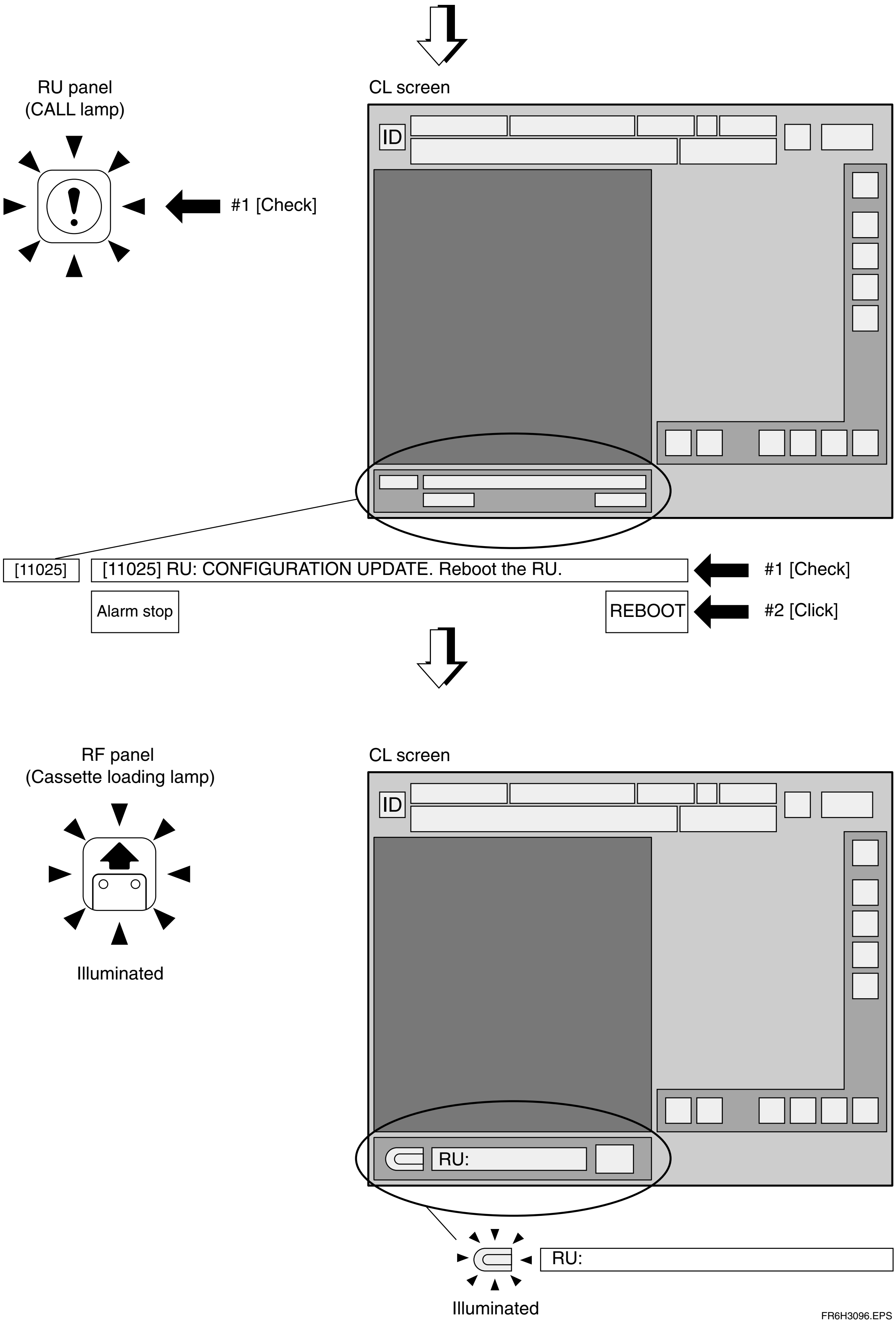
(11) Set the IP address of the CL to the user setup value.

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)”

(12) Click Start and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

(13) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and restart the RU from the CL screen.

When it is restarted, all the indicators on the panel are illuminated, and an audible alarm is generated.



RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11025]
#1 [Check]
Alarm stop
REBOOT
#2 [Click]
RF panel
(Cassette loading lamp)
Illuminated
CL screen
ID
RU:
RU:
Illuminated

[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

FR6H3096.EPS

# 7.3 Procedures for Changing the IP Address of the CL

## ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)

**◆ *NOTES* ◆**

- *When the CPU12A board is replaced with a new one, it is necessary to change the IP address and NET MASK settings of the CL.*
- *For the machine where the IP address of the CL has been set at its default value, it is unnecessary to perform the procedures described here.*

***CAUTIONS***

*Make sure that devices that are set as shown below are not connected over the same network:*

*"Device where 'ru0' is used as the RU host name"*
*"Device where the IP address is used by its default setting"*

*If any such device as described above is connected over the same network, disconnect that device from the same network by powering it OFF or unplugging its I/F cable.*
*Unless such a device is disconnected, the application and configuration data of that device will be automatically updated as well when the application of the RU is updated.*

(1) Make sure that devices that are set as shown below are not connected over the same network:

- Device where 'ru0' is used as the RU host name
- Device where the IP address is used by its default setting

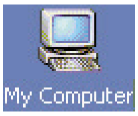
➩ If any such device is connected over the same network, disconnect that device from the same network by powering it OFF or unplugging its I/F cable.

(2) Power ON the RU.

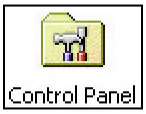
(3) Switch the CL screen to the desktop screen.

**◇ *REFERENCE* ◇**

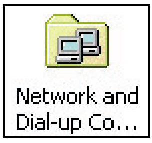
*To switch the CL screen to the desktop screen, hold down the <SHIFT> key and select "Shut Down" from the "FUJI FILM" menu.*

(4) Double-click  on the desktop.

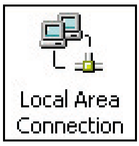
➩ The "My Computer" window opens.

(5) Double-click .

➪ The “Control Panel” window opens.

(6) Double-click .

➪ The “Network and Dial-up connection” window opens.

(7) Double-click .

➪ The “Local Area Connection” window opens.

### ◇ REFERENCE ◇

*On Windows 2000, the “Local Area Connection” icon may not appear on the display if your PC is not connected to other equipment (RU) with a network cable.*

(8) Click [Properties].

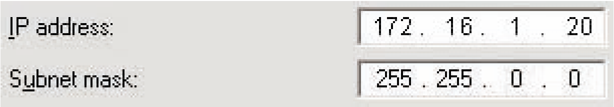
➪ The “Local Area Connection Properties” window opens.

(9) Choose [☑ Internet Protocol (TCP/IP)] and then click [Properties].

➪ The “Internet Protocol (TCP/IP) Properties” window opens.

(10) Choose [● Use the following IP address:].

(11) Perform the following setup steps:



IP address: 172 . 16 . 1 . 20

Subnet mask: 255 . 255 . 0 . 0

FR6H2548.EPS

(12) Click [OK].

➪ You are returned to the “Local Area Connection Properties” window.

(13) Click [OK].

➪ The system returns to the desktop screen.

### ◇ REFERENCE ◇

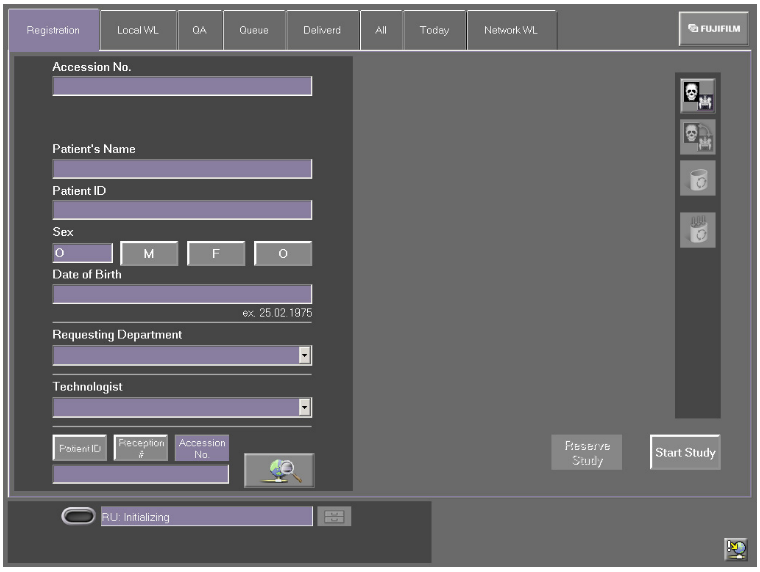
*When a window appears prompting you to restart the system, click [Yes].*
*Once the OS has started, the CL-AP will start up automatically.*

## ■ Verifying the connection after IP address changes

(1) Click **Start** and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

➩ The CL-AP starts up in about one minute.

The RU initialization message appears on the CL monitor. The RU becomes available in about one minute.


Registration
Local WL
QA
Queue
Deliverd
All
Today
Network WL
FUJIFILM
Accession No.
Patient's Name
Patient ID
Sex
O
M
F
O
Date of Birth
ex. 25.02.1975
Requesting Department
Technologist
Patient ID
Reception #
Accession No.
Reserve Study
Start Study

RU: Initializing

00000195.EPS

(2) From the CL user window (Registration), set patient data and exposure menu, and then click **Start Study**.

➩ Both the CL-AP window lamp and the RU panel’s cassette insertion lamp go on.

(3) Set the cassette in the RU’s cassette setting unit and make sure that images are transferred to the CL.

**◇ *REFERENCE* ◇**

---

*Be sure not to incorrectly enter an IP address for “NETWORK CONFIG” – “ALL OTHER NODES” – “ru0” settings, otherwise an image transfer error will be indicated.*

---

(4) Click ⇨ at the upper right corner of the window.

(5) Click FUJIFILM.

➩ A menu opens.

(6) Hold down the <Shift> key and click Shut Down.

➩ The CL-AP exits.

## ■ Changing the CL (IP Address/NET MASK) (from Default Setting to User Setting)

(1) Double-click My Computer on the desktop.

➩ The "My Computer" window opens.

(2) Double-click Control Panel.

➩ The "Control Panel" window opens.

(3) Double-click Network and Dial-up Co....

➩ The "Network and Dial-up connection" window opens.

(4) Double-click Local Area Connection.

➩ The “Local Area Connection” window opens.

### ◇ REFERENCE ◇

*On Windows 2000, the “Local Area Connection” icon may not appear on the display if your PC is not connected to other equipment (RU) with a network cable.*

(5) Click Properties.

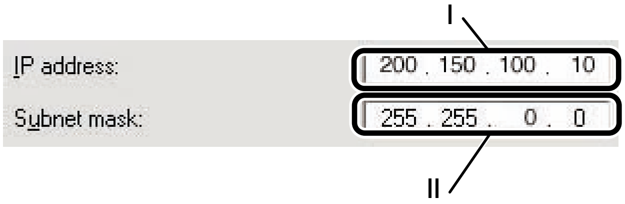
➩ The “Local Area Connection Properties” window opens.

(6) Choose ☑ Internet Protocol (TCP/IP) and then click Properties.

➩ The “Internet Protocol (TCP/IP) Properties” window opens.

(7) Choose ● Use the following IP address.

(8) Change the IP address to the user setting that has been noted at “■ Checking the IP Addresses of the CL and RU”.



IP address: 200 . 150 . 100 . 10

Subnet mask: 255 . 255 . 0 . 0

FR6H2551.EPS

I. Enter the IP address of the CL that has been set by the user (example: 200.150.100.10).

II. Enter a subnet mask.

(9) Click OK.

➩ You are returned to the “Local Area Connection Properties” window.

(10) Click OK.

➩ The system returns to the desktop screen.

### ◇ REFERENCE ◇

*When a window appears prompting you to restart the system, click [Yes].*
*Once the OS has started, the CL-AP will start up automatically.*

## ■ Checking Connection After Changing the IP Address

(1) Check the connection.

☞ “■ Checking Connection After Changing the IP Address”

*BLANK PAGE*

*BLANK PAGE*

*BLANK PAGE*

*BLANK PAGE*

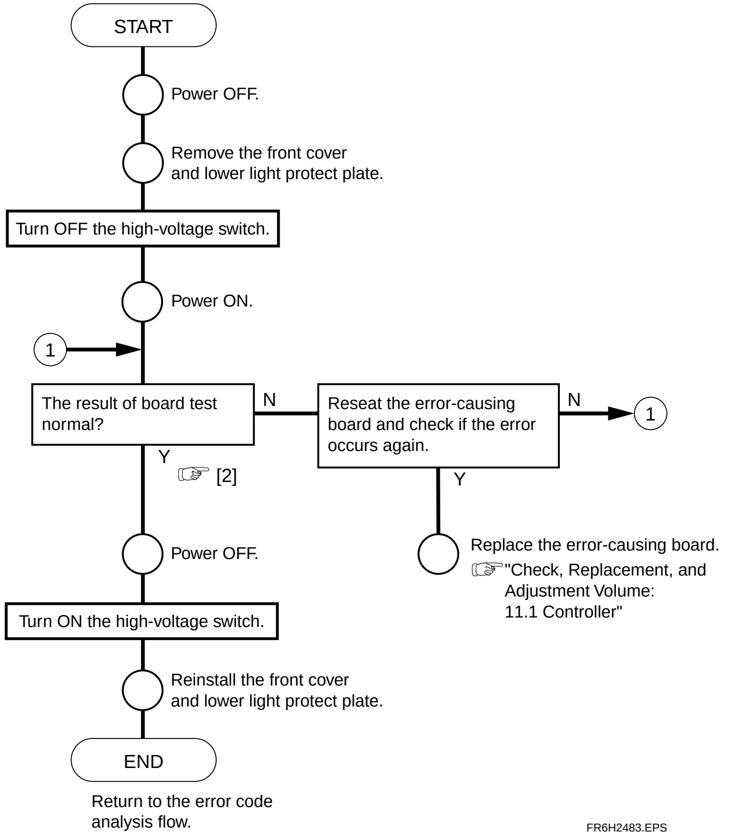
*BLANK PAGE*

*BLANK PAGE*

*BLANK PAGE*

# 8. Board Tests in M-Utility

## [1] Analysis Flow


START
Power OFF.
Remove the front cover and lower light protect plate.
Turn OFF the high-voltage switch.
Power ON.
1
The result of board test normal?
N
Reseat the error-causing board and check if the error occurs again.
N
1
Y
☞ [2]
Y
Power OFF.
Replace the error-causing board.
☞"Check, Replacement, and Adjustment Volume: 11.1 Controller"
Turn ON the high-voltage switch.
Reinstall the front cover and lower light protect plate.
END
Return to the error code analysis flow.
FR6H2483.EPS

## [2] Board Test

### ● Procedures

(1) Select the board to be tested.

[4][ENT] → [1][ENT] → [*][ENT]
A prompt appears to ask you to enter the number of tests repeated.

***◇ SUPPLEMENTARY NOTE ◇***

*For [*], enter the menu number for the board to be tested.*
*CPU12A: 2*
*SCN12A: 3*
*INV12A: 4*
*SND12A: 5*
*SUB CPU: 6*

(2) Enter “n” (number n of testes repeated).

Board tests are executed “n” times, and once they are completed normally, “RESULT: OK” appears.

To abort the processing in progress, hit [Ctrl]+[C] and then [ENT].

***◇ SUPPLEMENTARY NOTE ◇***

*For “n”, the number of tests repeated should be entered over a range from 1 to 99999.*

### ● Display

```
| EU>AT>* .......................................................  (1)   |
|                                                                        |
| INPUT REPEAT TIMES.                                                    |
| INPUT(0 - 99999):n ............................................  (2)   |
|                                                                        |
| COMMAND IS IN PROGRESS.                                                |
| INTERRUPTION : HIT[^C] + ENT KEY                                       |
|                                                                        |
| RESULT : OK                                                            |
```

[GOOD indication]
RESULT: OK

[NG indication]
RESULT: XXXXX

XXXXX denotes error code.

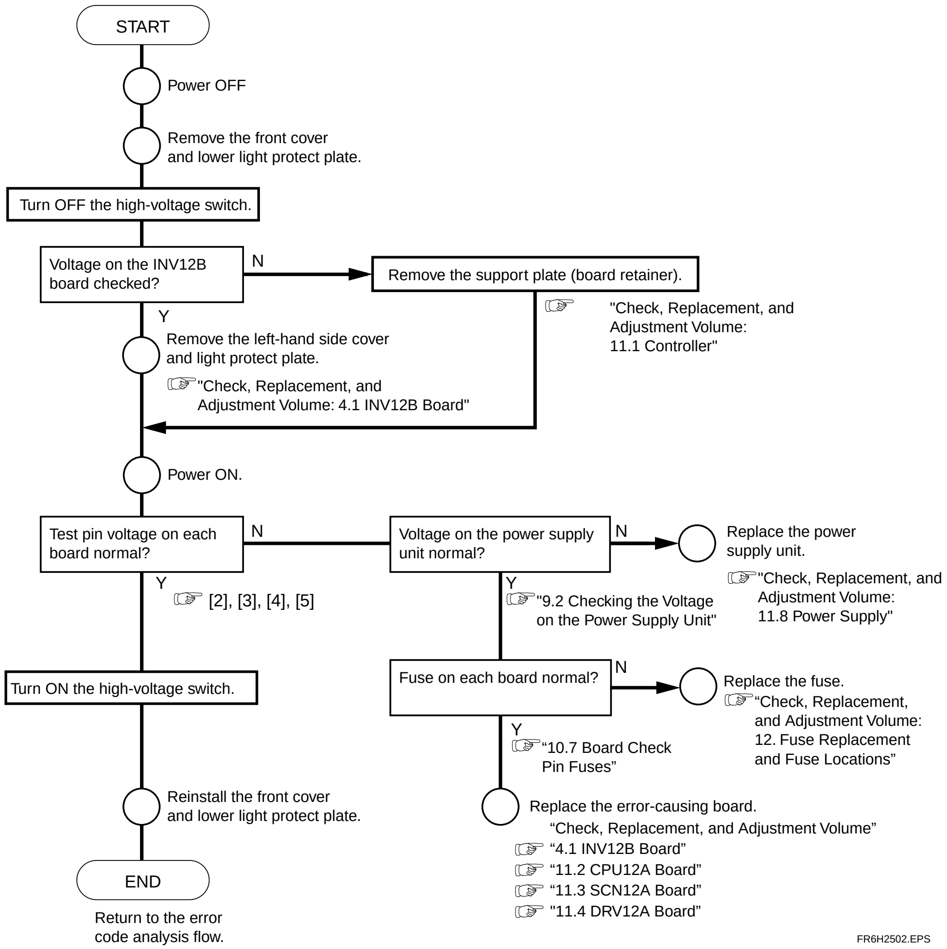
# 9. Checking the Voltage

***WARNING***

*To avoid possible electric shock hazard from high voltage, observe the following precautions.*
- *Do not touch the power supply terminals.*
- *When making voltage measurements, do not touch the probe (metal portion) of a tester.*

## 9.1 Checking the Voltage on Board Test Pins (Connectors)

### [1] Analysis Flow



START

Power OFF

Remove the front cover and lower light protect plate.

Turn OFF the high-voltage switch.

Voltage on the INV12B board checked?

N: Remove the support plate (board retainer).

☞ "Check, Replacement, and Adjustment Volume: 11.1 Controller"

Y: Remove the left-hand side cover and light protect plate.

☞ "Check, Replacement, and Adjustment Volume: 4.1 INV12B Board"

Power ON.

Test pin voltage on each board normal?

Y: ☞ [2], [3], [4], [5]

N: Voltage on the power supply unit normal?

N: Replace the power supply unit.

☞ "Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Y: ☞ "9.2 Checking the Voltage on the Power Supply Unit"

Fuse on each board normal?

N: Replace the fuse.

☞ "Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"

Y: ☞ "10.7 Board Check Pin Fuses"

Replace the error-causing board.

"Check, Replacement, and Adjustment Volume"

☞ "4.1 INV12B Board"

☞ "11.2 CPU12A Board"

☞ "11.3 SCN12A Board"

☞ "11.4 DRV12A Board"

Turn ON the high-voltage switch.

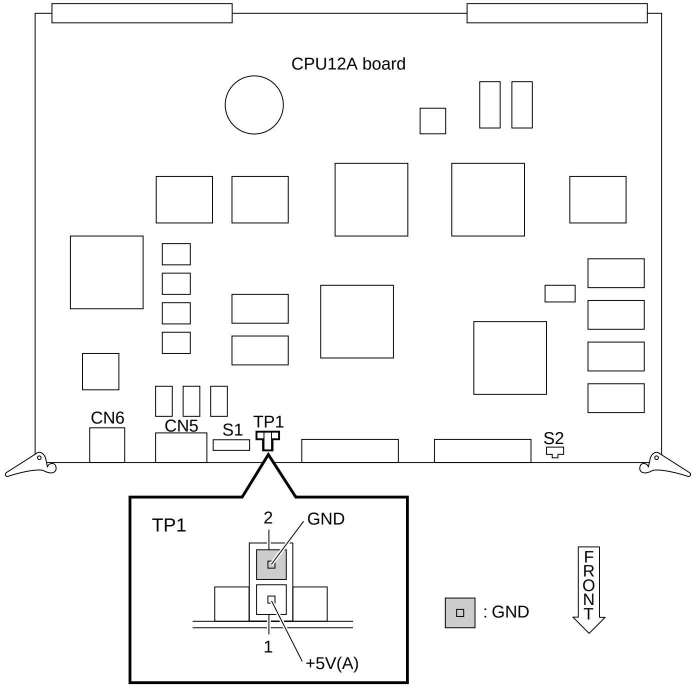
Reinstall the front cover and lower light protect plate.

END

Return to the error code analysis flow.

FR6H2502.EPS

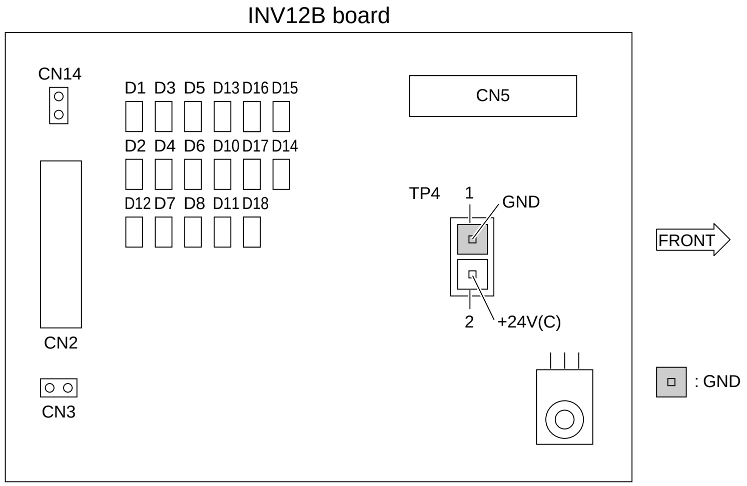
### [2] Checking the Voltage on the CPU12A Board Test Pin (TP1)



| Test pin TP1 | Voltage | Reference voltage |
|---|---|---|
| TP1 1-2 | +5V | Should be within a range from +4.95 to 5.20 V. |

FR6H2501.EPS

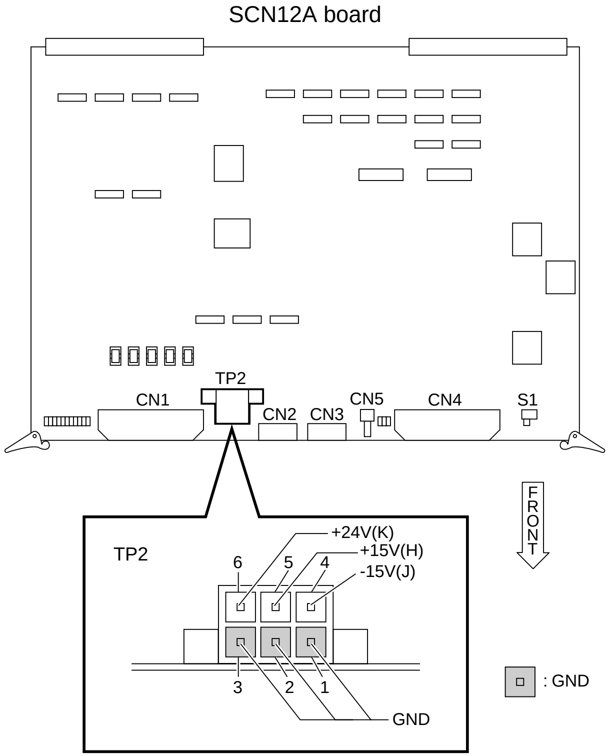
## [3] Checking the Voltage on the INV12B Board Test Pin (TP4)


INV12B board
CN14
D1 D3 D5 D13 D16 D15
D2 D4 D6 D10 D17 D14
D12 D7 D8 D11 D18
CN5
TP4
1
GND
2
+24V(C)
CN2
CN3
FRONT
: GND

| Test pin TP4 | Voltage | Reference voltage |
|---|---|---|
| TP4 1-2 | +24V | Should be within a range from +23.5 to 25.0 V. |

FR6H2503.EPS

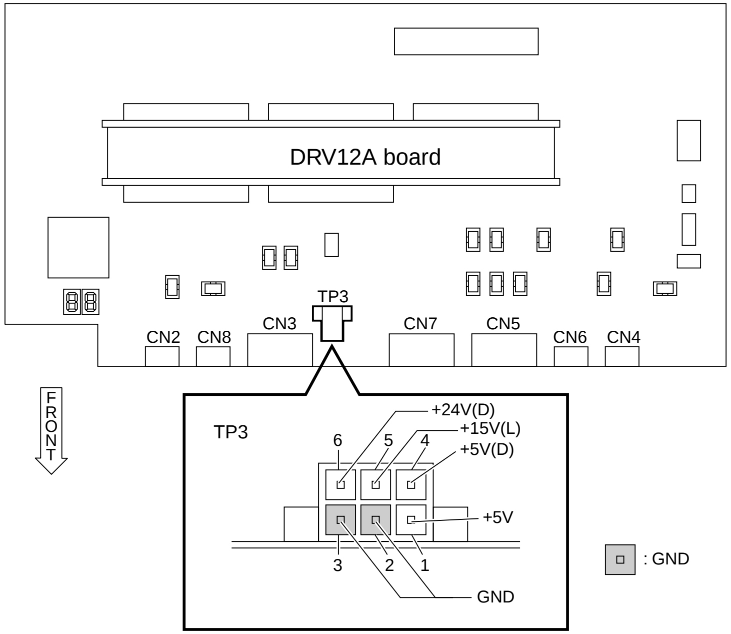
## [4] Checking the Voltage on the SCN12A Board Test Pin (TP2)


SCN12A board
TP2
CN1
CN2
CN3
CN5
CN4
S1
FRONT
TP2
6
5
4
+24V(K)
+15V(H)
-15V(J)
3
2
1
GND
: GND

| Test pin TP2 | Voltage | Reference voltage |
|---|---|---|
| TP2 3-6 | +24V | Should be within a range from +23.0 to 25.0 V. |
| TP2 2-5 | +15V | Should be within a range from +14.4 to 15.5 V. |
| TP2 1-4 | -15V | Should be within a range from -14.4 to -15.5 V. |

FR6H2504.EPS

## [5] Checking the Voltage on the DRV12A Board Test Pin (TP3)

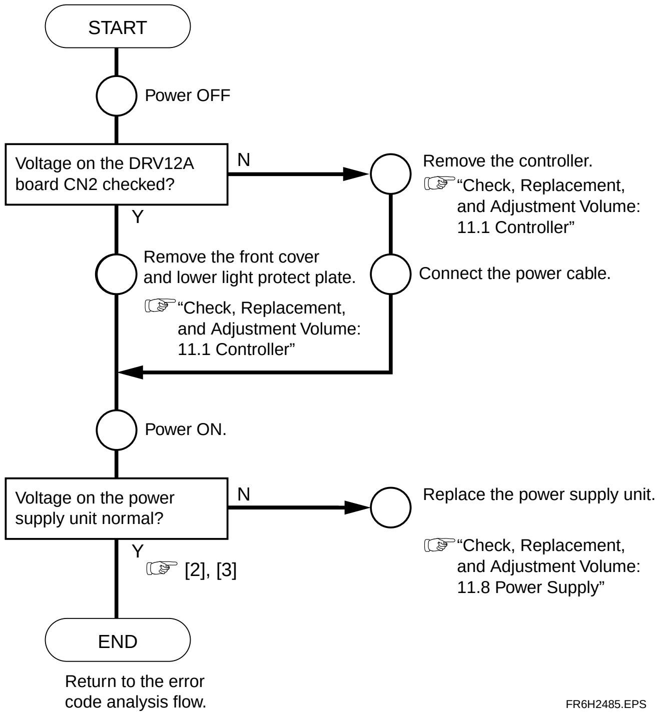

DRV12A board
TP3
CN2
CN8
CN3
CN7
CN5
CN6
CN4
FRONT
TP3
6
5
4
+24V(D)
+15V(L)
+5V(D)
+5V
3
2
1
GND
: GND

| Test pin TP3 | Voltage | Reference voltage |
|---|---|---|
| TP3 3-6 | +24V | Should be within a range from +23.5 to 25.0 V. |
| TP3 3-5 | +15V | Should be within a range from +14.4 to 15.5 V. |
| TP3 3-4 | +5V | Should be within a range from +4.80 to 5.20 V. |
| TP3 3-1 | +5V | Should be within a range from +4.75 to 5.25 V. |

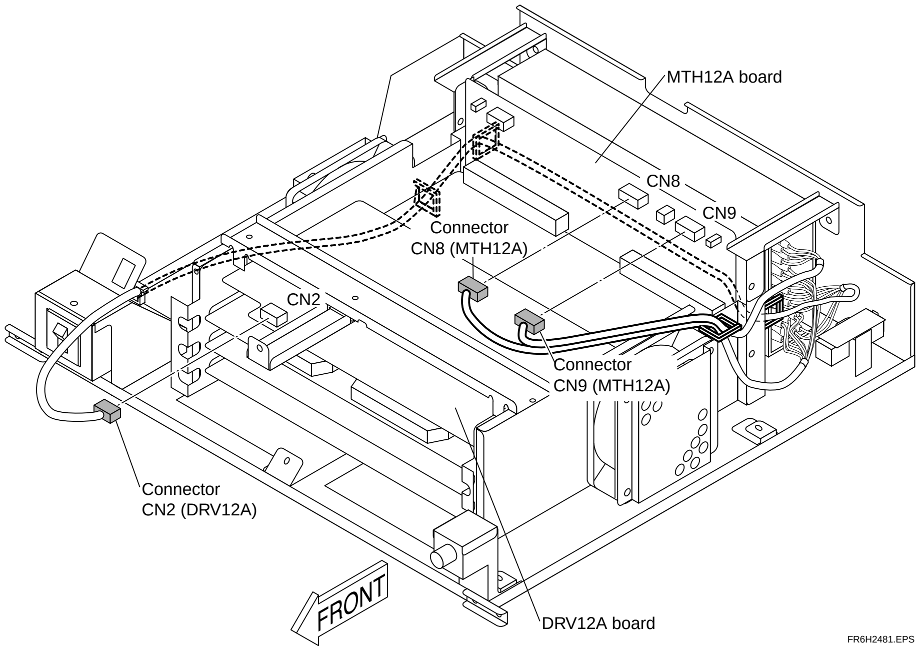
FR6H2505.EPS

## 9.2 Checking the Voltage on the Power Supply Unit

### [1] Analysis Flow


START
Power OFF
Voltage on the DRV12A board CN2 checked?
N
Remove the controller.
☞"Check, Replacement, and Adjustment Volume: 11.1 Controller"
Y
Remove the front cover and lower light protect plate.
☞"Check, Replacement, and Adjustment Volume: 11.1 Controller"
Connect the power cable.
Power ON.
Voltage on the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞ [2], [3]
END
Return to the error code analysis flow.
FR6H2485.EPS

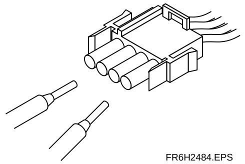
### [2] Connector Locations


MTH12A board
CN8
CN9
Connector
CN8 (MTH12A)
CN2
Connector
CN9 (MTH12A)
Connector
CN2 (DRV12A)
FRONT
DRV12A board
FR6H2481.EPS

## [3] Checking the Voltage

(1) Disconnect the connector to be measured.

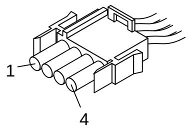
(2) Check the voltage as illustrated below.



FR6H2484.EPS

### ● MTH12A board

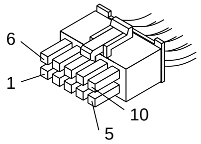
CN9 (MTH12A)



| Measurement point | Reference voltage | SLOT No. |
|---|---|---|
| CN9 1-3 | +4.95 to 5.20V | SLOT1 (A1) |
| CN9 2-4 | +4.95 to 5.20V | SLOT1 (A2) |

FR6H2478.EPS

CN8 (MTH12A)

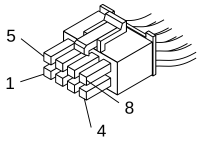


| Measurement point | Reference voltage | SLOT No. |
|---|---|---|
| CN8 1-6 | +23.5 to 25.0V | SLOT2 (B) |
| CN8 2-7 | +23.5 to 25.0V | SLOT2 (C) |
| CN8 3-8 | +14.4 to 15.5V | SLOT4 (H) |
| CN8 4-9 | -14.4 to -15.5V | SLOT4 (J) |
| CN8 5-10 | +23.0 to 25.0V | SLOT5 (K) |

FR6H2479.EPS

### ● DRV12A board

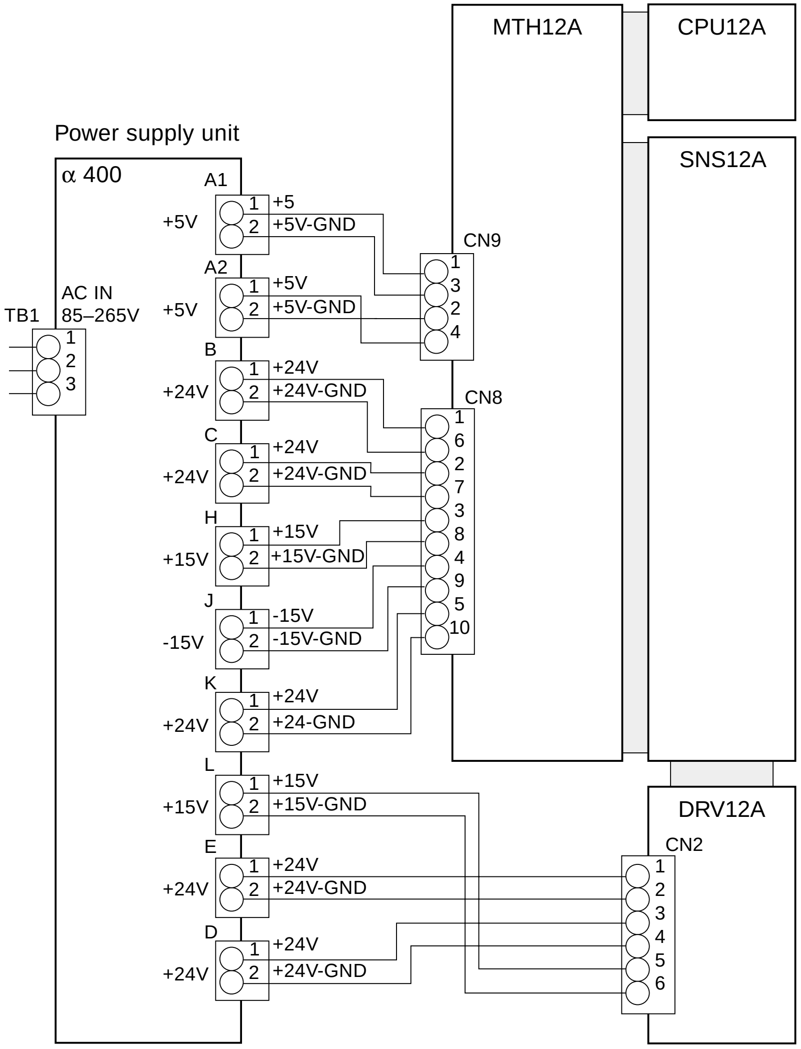
CN2 (DRV12A)



| Measurement point | Reference voltage | SLOT No. |
|---|---|---|
| CN2 5-6 | +14.4 to 15.5V | SLOT5 (L) |
| CN2 1-2 | +23.5 to 25.0V | SLOT3 (E) |
| CN2 3-4 | +23.5 to 25.0V | SLOT3 (D) |

FR6H2480.EPS

## [4] Block Diagram

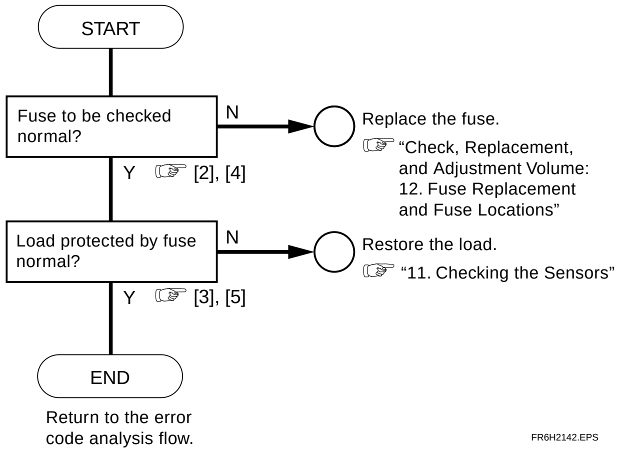

MTH12A
CPU12A
SNS12A
DRV12A
Power supply unit
α 400
AC IN
85–265V
TB1
1
2
3
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
B
+24V
1 +24V
2 +24V-GND
C
+24V
1 +24V
2 +24V-GND
H
+15V
1 +15V
2 +15V-GND
J
-15V
1 -15V
2 -15V-GND
K
+24V
1 +24V
2 +24-GND
L
+15V
1 +15V
2 +15V-GND
E
+24V
1 +24V
2 +24V-GND
D
+24V
1 +24V
2 +24V-GND
CN9
1
3
2
4
CN8
1
6
2
7
3
8
4
9
5
10
CN2
1
2
3
4
5
6

FR6H2482.EPS

# 10. Checking the Fuses

## 10.1 Sensor-Related Fuses

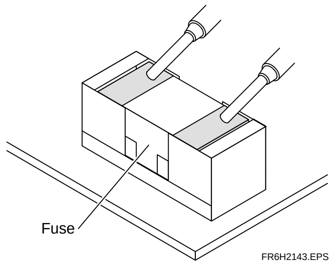
### [1] Analysis Flow


START
Fuse to be checked normal?
N
Replace the fuse.
☞ "Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞ [2], [4]
Load protected by fuse normal?
N
Restore the load.
☞ "11. Checking the Sensors"
Y
☞ [3], [5]
END
Return to the error code analysis flow.

FR6H2142.EPS

### [2] Checking the Fuse

Check for continuity as illustrated below.



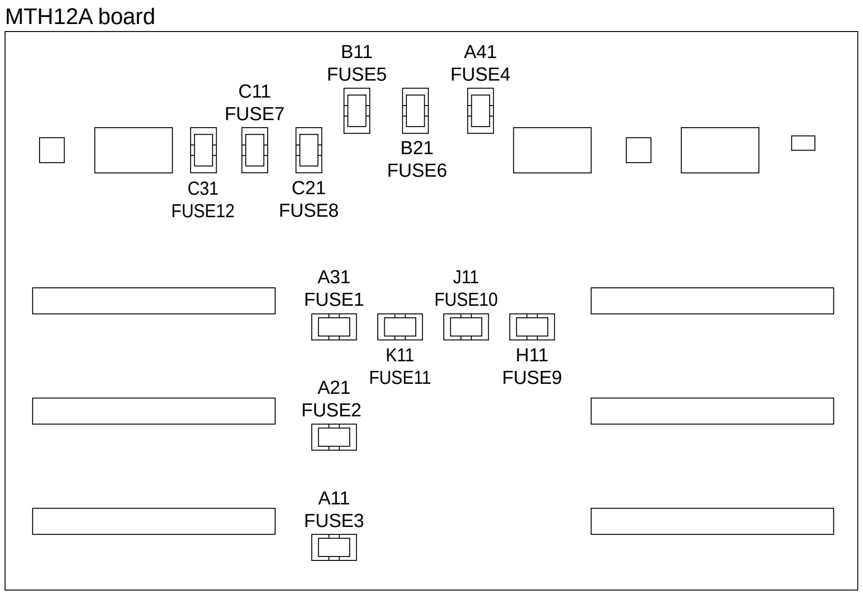
FR6H2143.EPS

### [3] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

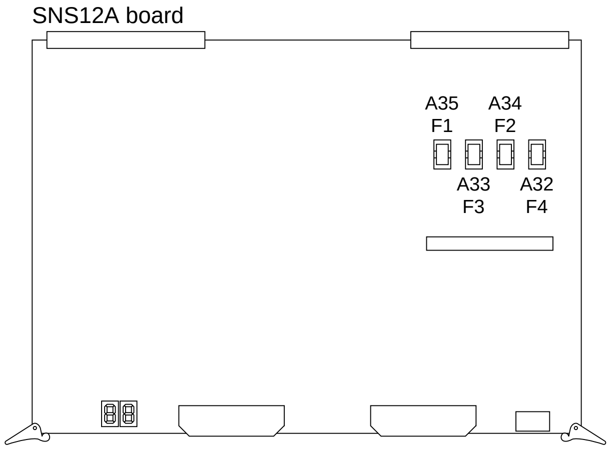
1. Check for shorts between each of the pins and GND → 2Ω or greater.
2. Check for shorts between each of the pins → 2Ω or greater.
3. Check for continuity of each of the pins → 1Ω or less.

### [4] Fuse Locations


MTH12A board
B11
FUSE5
A41
FUSE4
C11
FUSE7
B21
FUSE6
C31
FUSE12
C21
FUSE8
A31
FUSE1
J11
FUSE10
K11
FUSE11
H11
FUSE9
A21
FUSE2
A11
FUSE3

FUSE1-FUSE12: Marked numbers on the board

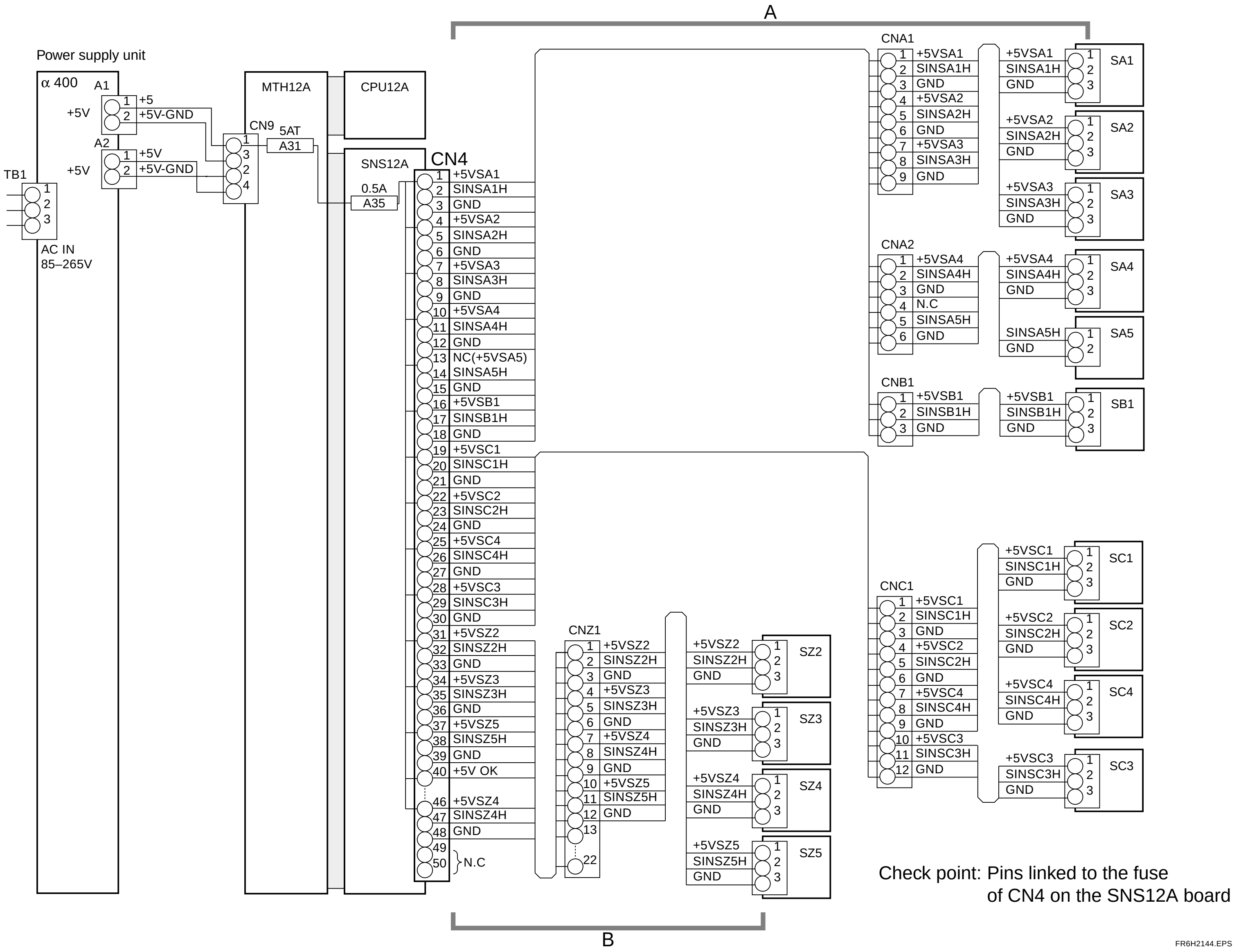
FR6H2507.EPS


SNS12A board
A35
F1
A34
F2
A33
F3
A32
F4

F1-F4: Marked number on the board

FR6H2509.EPS

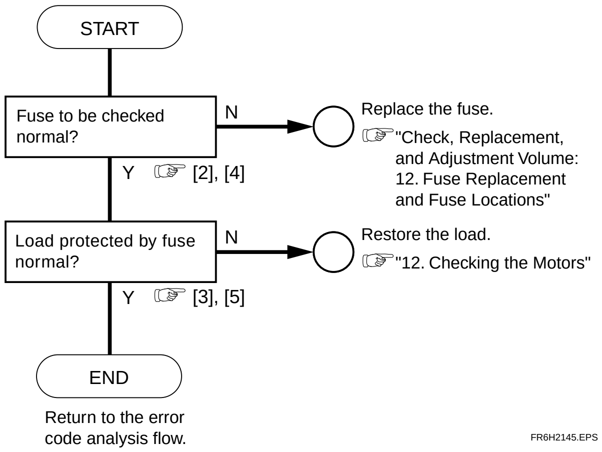
## [5] Block Diagram


A
B
Power supply unit
α 400
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
TB1
1
2
3
AC IN
85–265V
MTH12A
CN9
1
3
2
4
5AT
A31
CPU12A
SNS12A
0.5A
A35
CN4
1 +5VSA1
2 SINSA1H
3 GND
4 +5VSA2
5 SINSA2H
6 GND
7 +5VSA3
8 SINSA3H
9 GND
10 +5VSA4
11 SINSA4H
12 GND
13 NC(+5VSA5)
14 SINSA5H
15 GND
16 +5VSB1
17 SINSB1H
18 GND
19 +5VSC1
20 SINSC1H
21 GND
22 +5VSC2
23 SINSC2H
24 GND
25 +5VSC4
26 SINSC4H
27 GND
28 +5VSC3
29 SINSC3H
30 GND
31 +5VSZ2
32 SINSZ2H
33 GND
34 +5VSZ3
35 SINSZ3H
36 GND
37 +5VSZ5
38 SINSZ5H
39 GND
40 +5V OK
46 +5VSZ4
47 SINSZ4H
48 GND
49
50
N.C
CNA1
1 +5VSA1
2 SINSA1H
3 GND
4 +5VSA2
5 SINSA2H
6 GND
7 +5VSA3
8 SINSA3H
9 GND
CNA2
1 +5VSA4
2 SINSA4H
3 GND
4 N.C
5 SINSA5H
6 GND
CNB1
1 +5VSB1
2 SINSB1H
3 GND
+5VSA1 SINSA1H GND 1 2 3 SA1
+5VSA2 SINSA2H GND 1 2 3 SA2
+5VSA3 SINSA3H GND 1 2 3 SA3
+5VSA4 SINSA4H GND 1 2 3 SA4
SINSA5H GND 1 2 SA5
+5VSB1 SINSB1H GND 1 2 3 SB1
CNZ1
1 +5VSZ2
2 SINSZ2H
3 GND
4 +5VSZ3
5 SINSZ3H
6 GND
7 +5VSZ4
8 SINSZ4H
9 GND
10 +5VSZ5
11 SINSZ5H
12 GND
13
22
+5VSZ2 SINSZ2H GND 1 2 3 SZ2
+5VSZ3 SINSZ3H GND 1 2 3 SZ3
+5VSZ4 SINSZ4H GND 1 2 3 SZ4
+5VSZ5 SINSZ5H GND 1 2 3 SZ5
CNC1
1 +5VSC1
2 SINSC1H
3 GND
4 +5VSC2
5 SINSC2H
6 GND
7 +5VSC4
8 SINSC4H
9 GND
10 +5VSC3
11 SINSC3H
12 GND
+5VSC1 SINSC1H GND 1 2 3 SC1
+5VSC2 SINSC2H GND 1 2 3 SC2
+5VSC4 SINSC4H GND 1 2 3 SC4
+5VSC3 SINSC3H GND 1 2 3 SC3
FR6H2144.EPS

Check point: Pins linked to the fuse
of CN4 on the SNS12A board

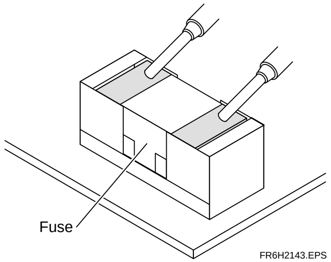
## 10.2 Motor-Related Fuses

### [1] Analysis Flow


START
Fuse to be checked normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y ☞ [2], [4]
Load protected by fuse normal?
N
Restore the load.
☞"12. Checking the Motors"
Y ☞ [3], [5]
END
Return to the error code analysis flow.
FR6H2145.EPS

### [2] Checking the Fuse

Check for continuity as illustrated below.

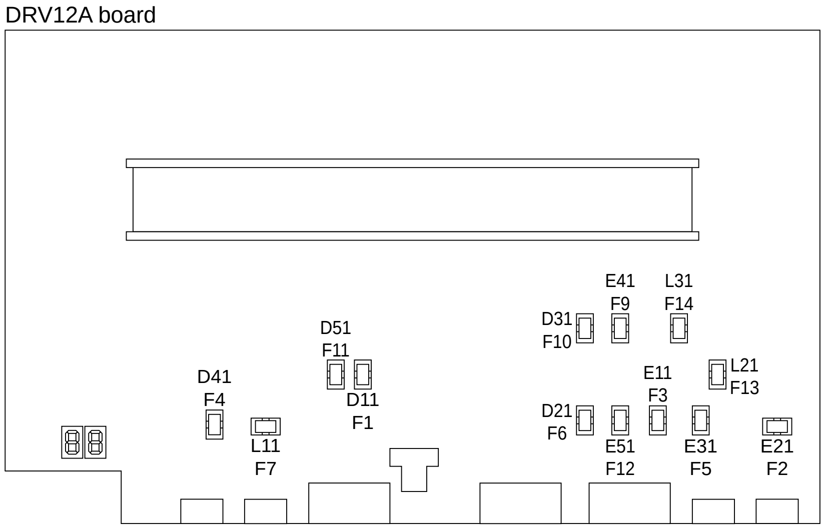

Fuse
FR6H2143.EPS

### [3] Checking the Cable

Check the following between the portions <A> in the block diagram.

1. Check for shorts between each of the pins and GND → 2Ω or greater.
2. Check for shorts between each of the pins → 2Ω or greater.
3. Check for continuity of each of the pins → 1Ω or less.

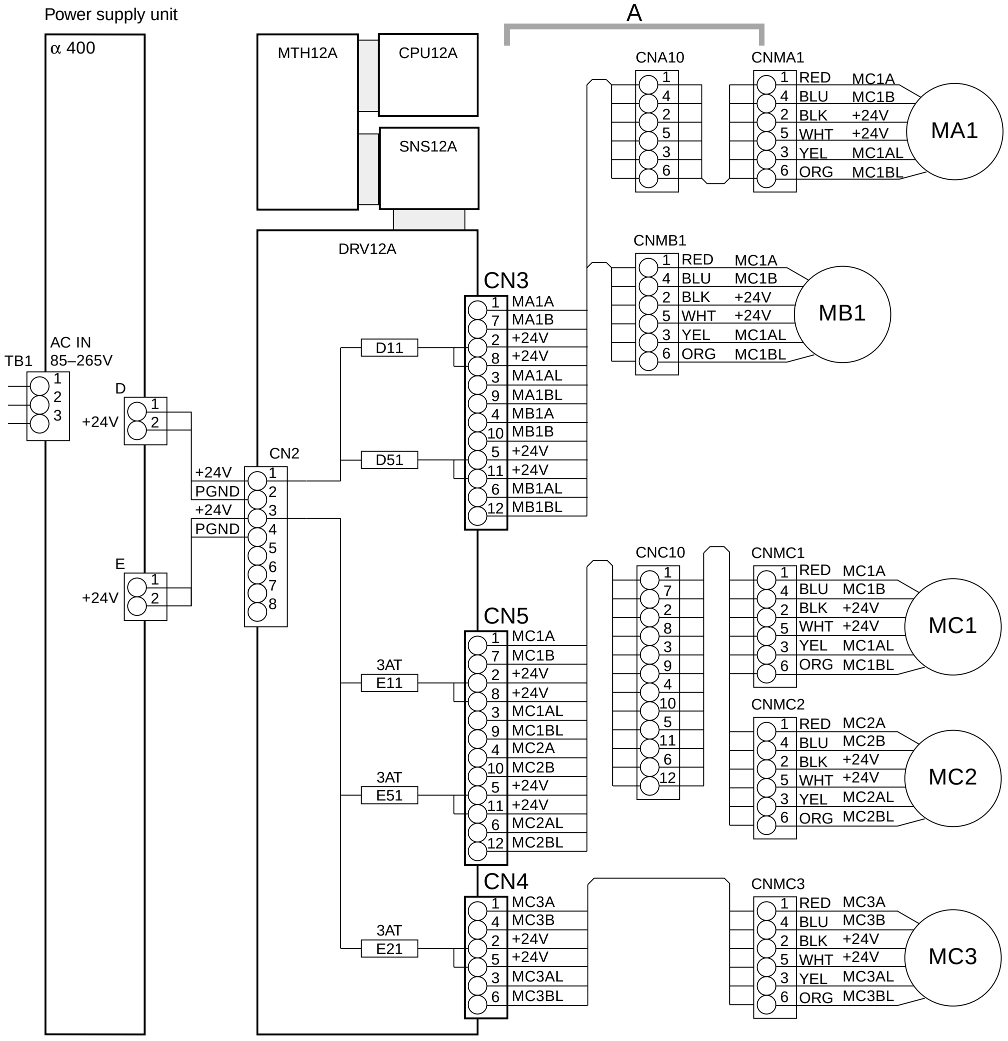
### [4] Fuse Locations


DRV12A board
E41
F9
L31
F14
D31
F10
D51
F11
E11
F3
L21
F13
D41
F4
D11
F1
D21
F6
L11
F7
E51
F12
E31
F5
E21
F2

F1-F7, F9-F14: Marked number on the board

FR6H2510.EPS

## [5] Block Diagram

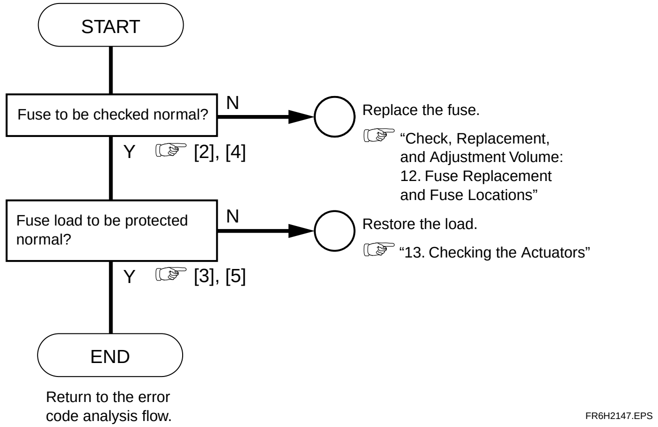

Power supply unit
α 400
AC IN
85–265V
TB1
1
2
3
D
+24V
1
2
E
+24V
1
2
+24V
PGND
+24V
PGND
CN2
1
2
3
4
5
6
7
8
MTH12A
CPU12A
SNS12A
DRV12A
D11
D51
3AT
E11
3AT
E51
3AT
E21
A
CN3
1 MA1A
7 MA1B
2 +24V
8 +24V
3 MA1AL
9 MA1BL
4 MB1A
10 MB1B
5 +24V
11 +24V
6 MB1AL
12 MB1BL
CN5
1 MC1A
7 MC1B
2 +24V
8 +24V
3 MC1AL
9 MC1BL
4 MC2A
10 MC2B
5 +24V
11 +24V
6 MC2AL
12 MC2BL
CN4
1 MC3A
4 MC3B
2 +24V
5 +24V
3 MC3AL
6 MC3BL
CNA10
1
4
2
5
3
6
CNMA1
1 RED MC1A
4 BLU MC1B
2 BLK +24V
5 WHT +24V
3 YEL MC1AL
6 ORG MC1BL
MA1
CNMB1
1 RED MC1A
4 BLU MC1B
2 BLK +24V
5 WHT +24V
3 YEL MC1AL
6 ORG MC1BL
MB1
CNC10
1
7
2
8
3
9
4
10
5
11
6
12
CNMC1
1 RED MC1A
4 BLU MC1B
2 BLK +24V
5 WHT +24V
3 YEL MC1AL
6 ORG MC1BL
MC1
CNMC2
1 RED MC2A
4 BLU MC2B
2 BLK +24V
5 WHT +24V
3 YEL MC2AL
6 ORG MC2BL
MC2
CNMC3
1 RED MC3A
4 BLU MC3B
2 BLK +24V
5 WHT +24V
3 YEL MC3AL
6 ORG MC3BL
MC3

Check point: Pins linked to the fuses of CN3, CN4, and CN5 on the DRV12A board

FR6H2146.EPS

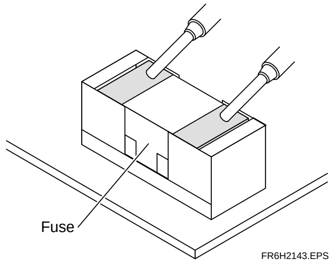
## 10.3 Actuator-Related Fuses

### [1] Analysis Flow


START
Fuse to be checked normal?
N
Replace the fuse.
☞ “Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations”
Y
☞ [2], [4]
Fuse load to be protected normal?
N
Restore the load.
☞ “13. Checking the Actuators”
Y
☞ [3], [5]
END
Return to the error code analysis flow.
FR6H2147.EPS

### [2] Checking the Fuse

Check for continuity as illustrated below.

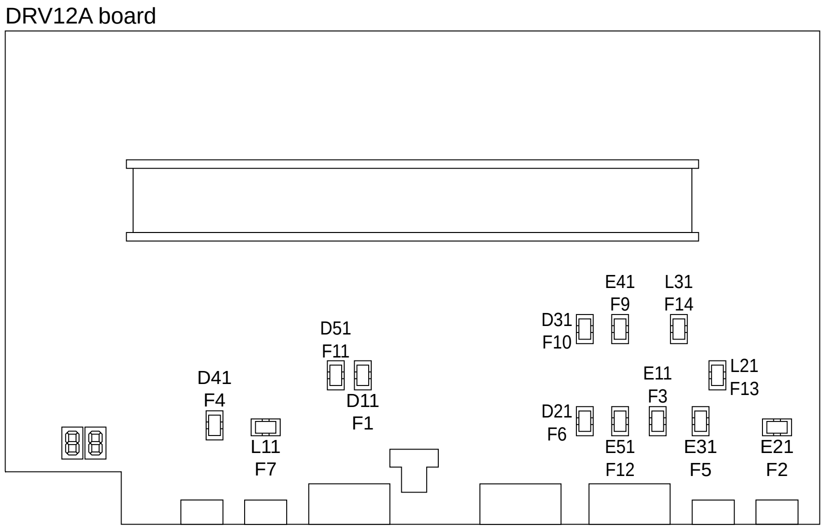

Fuse
FR6H2143.EPS

### [3] Checking the Cable

Check the following between the portions <A> in the block diagram.

1. Check for shorts between each of the pins and GND → 2Ω or greater.
2. Check for shorts between each of the pins → 2Ω or greater.
3. Check for continuity of each of the pins → 1Ω or less.

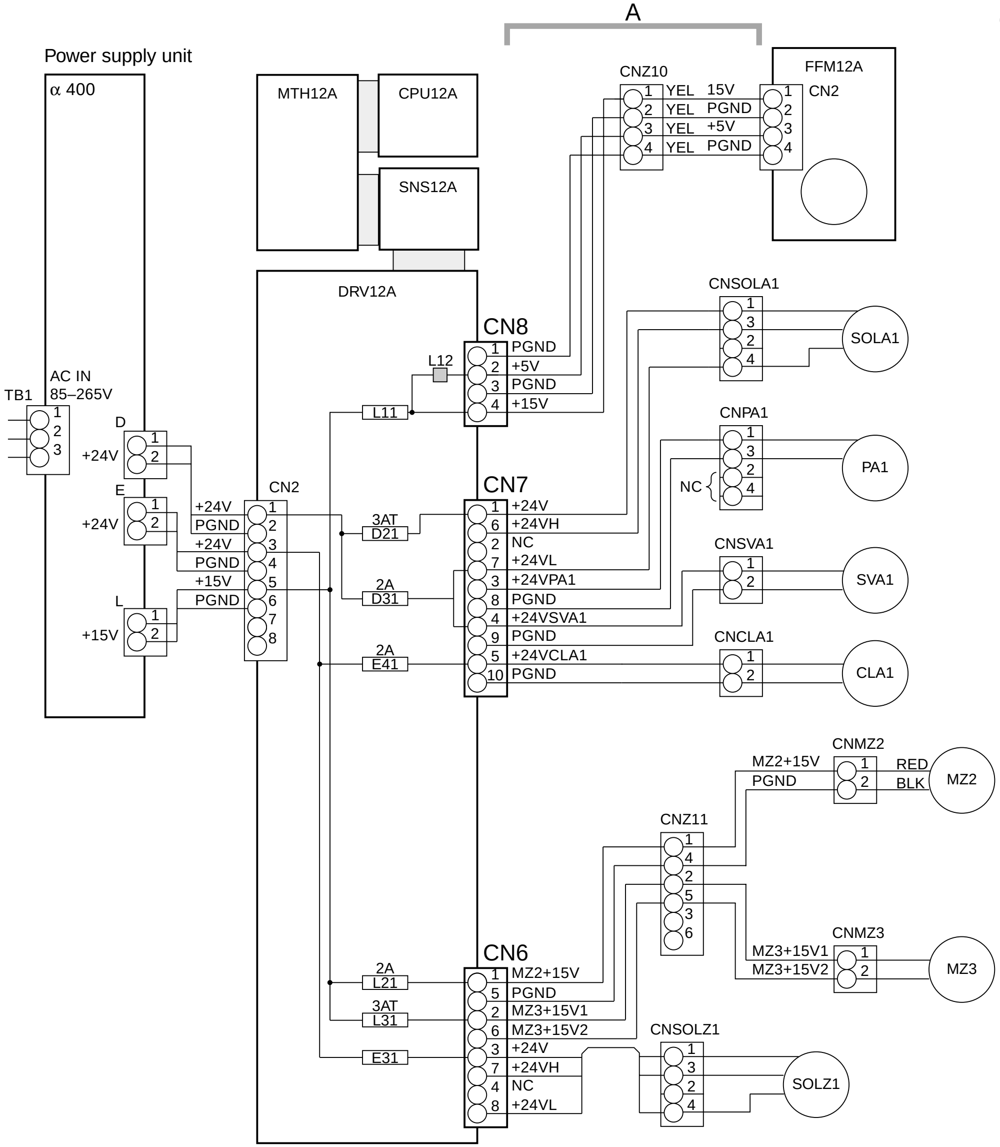
### [4] Fuse Locations


DRV12A board
E41
F9
L31
F14
D31
F10
D51
F11
E11
F3
L21
F13
D41
F4
D11
F1
D21
F6
L11
F7
E51
F12
E31
F5
E21
F2

F1-F7, F9-F14: Marked number on the board

FR6H2510.EPS

## [5] Block Diagram


A
Power supply unit
α 400
AC IN
85–265V
TB1
1
2
3
D
+24V
E
+24V
L
+15V
MTH12A
CPU12A
SNS12A
DRV12A
CN2
+24V
PGND
+24V
PGND
+15V
PGND
L11
L12
3AT
D21
2A
D31
2A
E41
2A
L21
3AT
L31
E31
CN8
1 PGND
2 +5V
3 PGND
4 +15V
CN7
1 +24V
6 +24VH
2 NC
7 +24VL
3 +24VPA1
8 PGND
4 +24VSVA1
9 PGND
5 +24VCLA1
10 PGND
CN6
1 MZ2+15V
5 PGND
2 MZ3+15V1
6 MZ3+15V2
3 +24V
7 +24VH
4 NC
8 +24VL
CNZ10
1 YEL 15V
2 YEL PGND
3 YEL +5V
4 YEL PGND
FFM12A
CN2
CNSOLA1
SOLA1
CNPA1
NC
PA1
CNSVA1
SVA1
CNCLA1
CLA1
CNMZ2
MZ2+15V
PGND
RED
BLK
MZ2
CNZ11
CNMZ3
MZ3+15V1
MZ3+15V2
MZ3
CNSOLZ1
SOLZ1

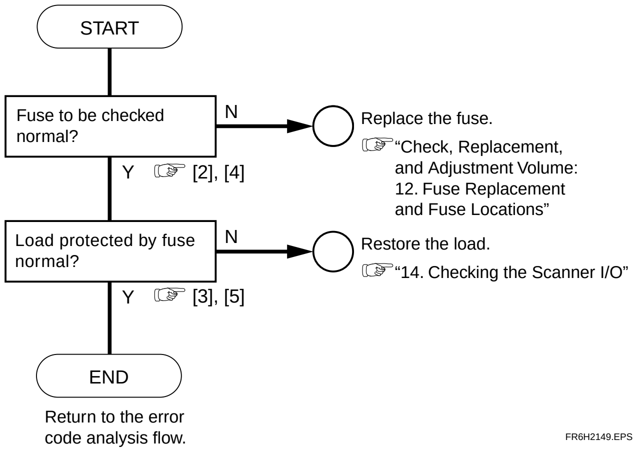
Check point: Pins linked to the fuses
of CN6, CN7, and CN8
on the DRV12A board

▨ : +15V → +5V regulator

FR6H2148.EPS

## 10.4 Scanner-Related Fuses

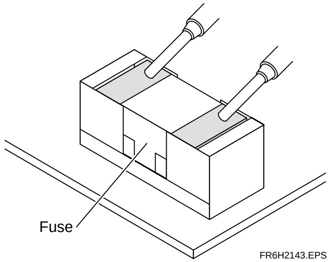
### [1] Analysis Flow


START
Fuse to be checked normal?
N
Replace the fuse.
☞“Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations”
Y ☞ [2], [4]
Load protected by fuse normal?
N
Restore the load.
☞“14. Checking the Scanner I/O”
Y ☞ [3], [5]
END
Return to the error code analysis flow.

FR6H2149.EPS

### [2] Checking the Fuse

Check for continuity as illustrated below.



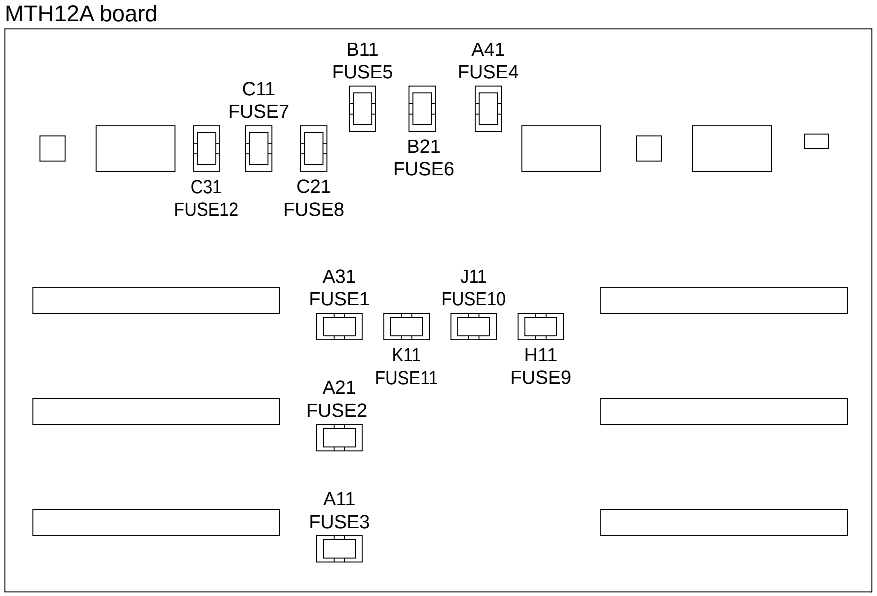
FR6H2143.EPS

### [3] Checking the Cable

Check the following between the portions <A, B, and C> in the block diagram.

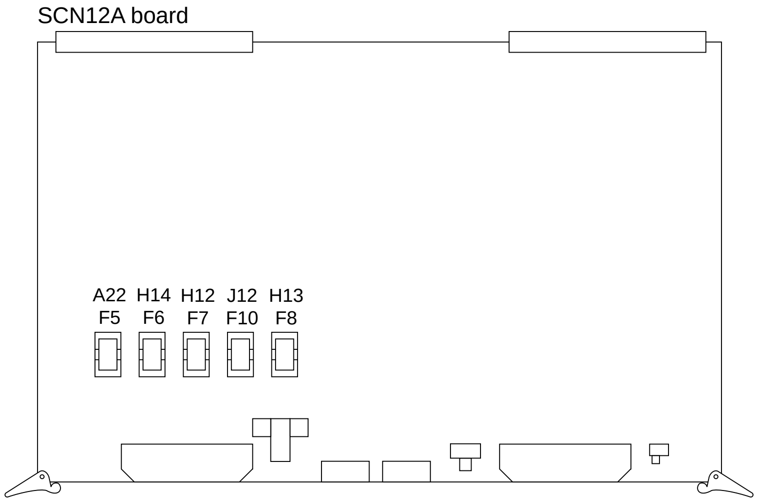
1. Check for shorts between each of the pins and GND → 2Ω or greater.
2. Check for shorts between each of the pins → 2Ω or greater.
3. Check for continuity of each of the pins → 1Ω or less.

### [4] Fuse Locations


MTH12A board
B11
FUSE5
A41
FUSE4
C11
FUSE7
B21
FUSE6
C31
FUSE12
C21
FUSE8
A31
FUSE1
J11
FUSE10
K11
FUSE11
H11
FUSE9
A21
FUSE2
A11
FUSE3

FUSE1-FUSE12: Marked numbers on the board

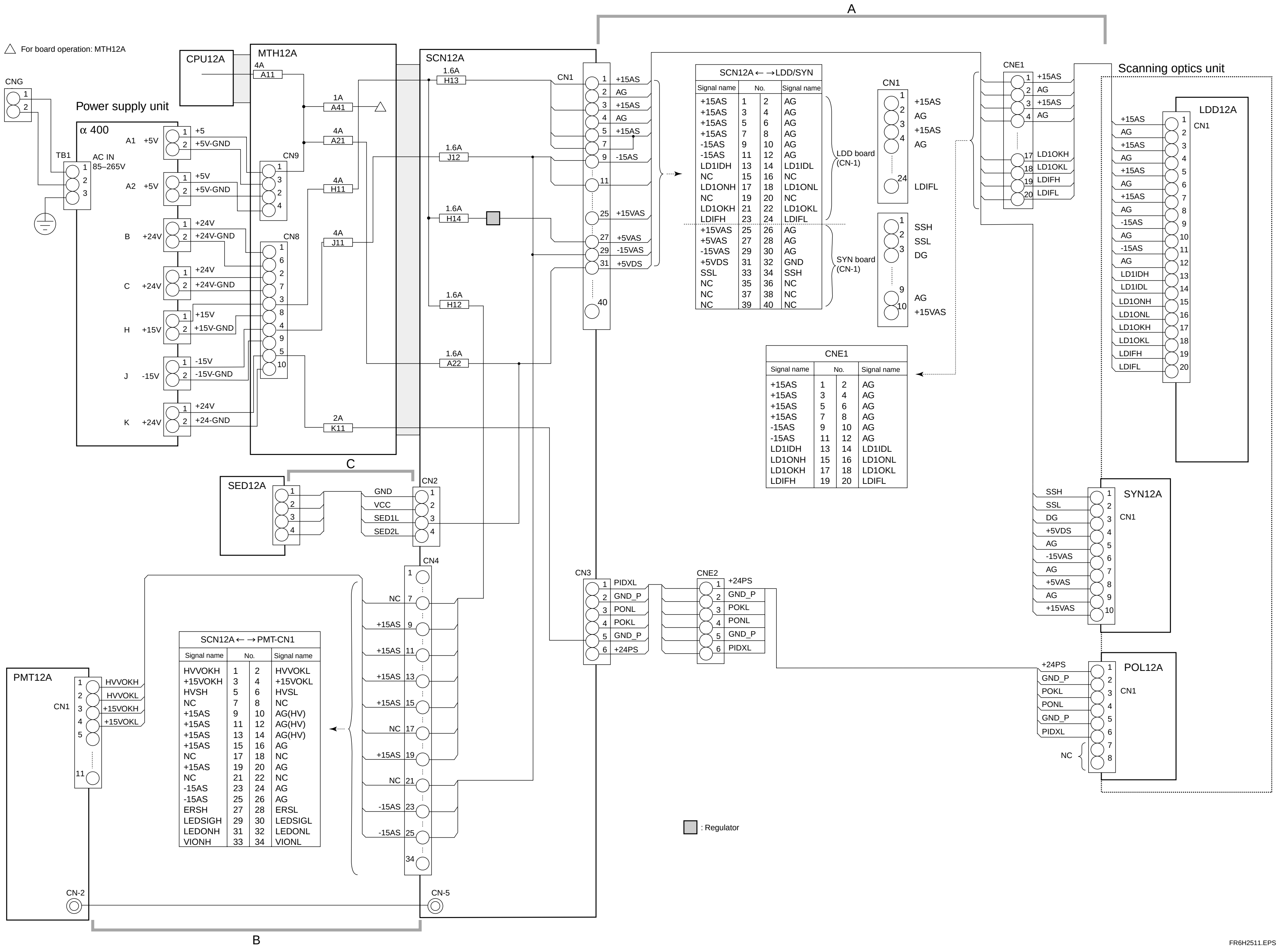
FR6H2507.EPS


SCN12A board
A22
F5
H14
F6
H12
F7
J12
F10
H13
F8

F1-4: Marked number on the board

FR6H2508.EPS

## [5] Block Diagram


△ For board operation: MTH12A
A
B
C
CNG
Power supply unit
α 400
TB1
AC IN 85–265V
A1 +5V
A2 +5V
B +24V
C +24V
H +15V
J -15V
K +24V
+5
+5V-GND
+24V-GND
+15V-GND
-15V-GND
+24-GND
CPU12A
MTH12A
CN9
CN8
4A A11
1A A41
4A A21
4A H11
4A J11
2A K11
SCN12A
1.6A H13
1.6A J12
1.6A H14
1.6A H12
1.6A A22
CN1
+15AS
AG
-15AS
+15VAS
+5VAS
-15VAS
+5VDS
CN2
CN3
CN4
CN-5
SED12A
GND
VCC
SED1L
SED2L
PMT12A
CN1
HVVOKH
HVVOKL
+15VOKH
+15VOKL
CN-2
NC
PIDXL
GND_P
PONL
POKL
+24PS
CNE2
LDD board (CN-1)
SYN board (CN-1)
LDIFL
SSH
SSL
DG
CNE1
LD1OKH
LD1OKL
LDIFH
Scanning optics unit
LDD12A
LD1IDH
LD1IDL
LD1ONH
LD1ONL
SYN12A
POL12A
▨ : Regulator
FR6H2511.EPS

SCN12A←→LDD/SYN

| Signal name | No. | | Signal name |
|---|---|---|---|
| +15AS | 1 | 2 | AG |
| +15AS | 3 | 4 | AG |
| +15AS | 5 | 6 | AG |
| +15AS | 7 | 8 | AG |
| -15AS | 9 | 10 | AG |
| -15AS | 11 | 12 | AG |
| LD1IDH | 13 | 14 | LD1IDL |
| NC | 15 | 16 | NC |
| LD1ONH | 17 | 18 | LD1ONL |
| NC | 19 | 20 | NC |
| LD1OKH | 21 | 22 | LD1OKL |
| LDIFH | 23 | 24 | LDIFL |
| +15VAS | 25 | 26 | AG |
| +5VAS | 27 | 28 | AG |
| -15VAS | 29 | 30 | AG |
| +5VDS | 31 | 32 | GND |
| SSL | 33 | 34 | SSH |
| NC | 35 | 36 | NC |
| NC | 37 | 38 | NC |
| NC | 39 | 40 | NC |

CNE1

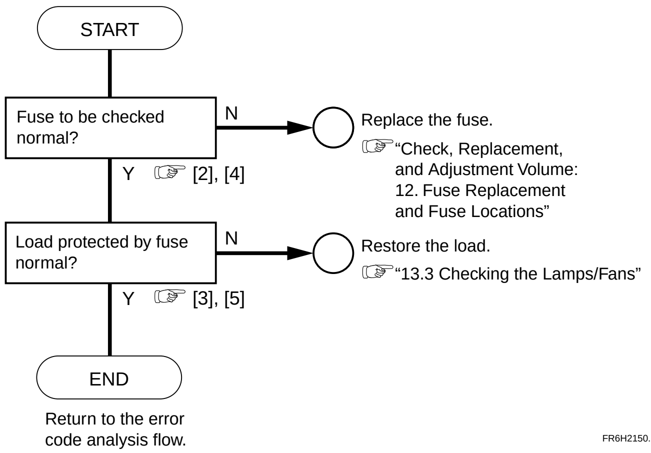
| Signal name | No. | | Signal name |
|---|---|---|---|
| +15AS | 1 | 2 | AG |
| +15AS | 3 | 4 | AG |
| +15AS | 5 | 6 | AG |
| +15AS | 7 | 8 | AG |
| -15AS | 9 | 10 | AG |
| -15AS | 11 | 12 | AG |
| LD1IDH | 13 | 14 | LD1IDL |
| LD1ONH | 15 | 16 | LD1ONL |
| LD1OKH | 17 | 18 | LD1OKL |
| LDIFH | 19 | 20 | LDIFL |

SCN12A←→PMT-CN1

| Signal name | No. | | Signal name |
|---|---|---|---|
| HVVOKH | 1 | 2 | HVVOKL |
| +15VOKH | 3 | 4 | +15VOKL |
| HVSH | 5 | 6 | HVSL |
| NC | 7 | 8 | NC |
| +15AS | 9 | 10 | AG(HV) |
| +15AS | 11 | 12 | AG(HV) |
| +15AS | 13 | 14 | AG(HV) |
| +15AS | 15 | 16 | AG |
| NC | 17 | 18 | NC |
| +15AS | 19 | 20 | AG |
| NC | 21 | 22 | NC |
| -15AS | 23 | 24 | AG |
| -15AS | 25 | 26 | AG |
| ERSH | 27 | 28 | ERSL |
| LEDSIGH | 29 | 30 | LEDSIGL |
| LEDONH | 31 | 32 | LEDONL |
| VIONH | 33 | 34 | VIONL |

## 10.5 Erasure Lamp and Cooling Fan Fuses

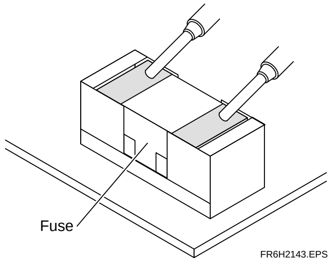
### [1] Analysis Flow


START
Fuse to be checked normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y ☞ [2], [4]
Load protected by fuse normal?
N
Restore the load.
☞"13.3 Checking the Lamps/Fans"
Y ☞ [3], [5]
END
Return to the error code analysis flow.

FR6H2150.EPS

### [2] Checking the Fuse

Check for continuity as illustrated below.



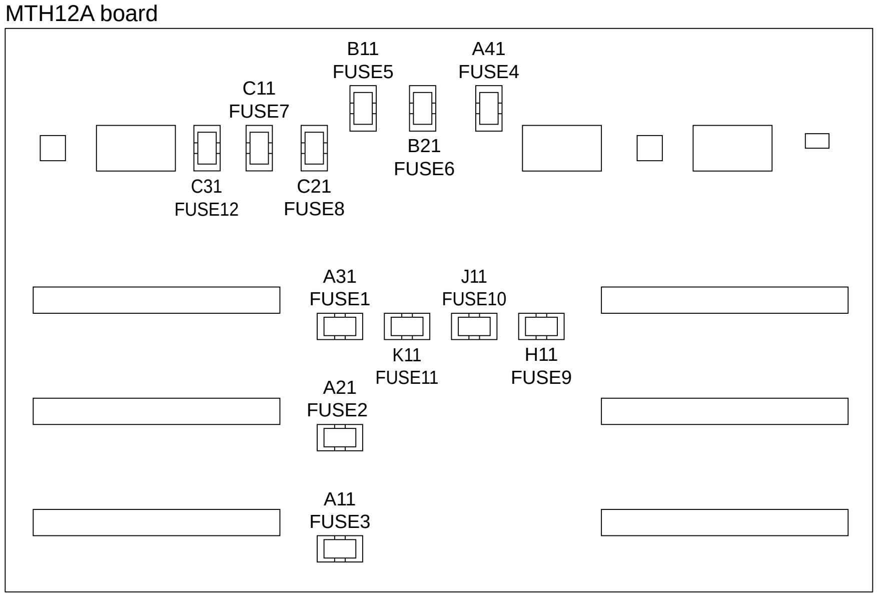
FR6H2143.EPS

### [3] Checking the Cable

Check the following between the portions <A, B, C, and D> in the block diagram.

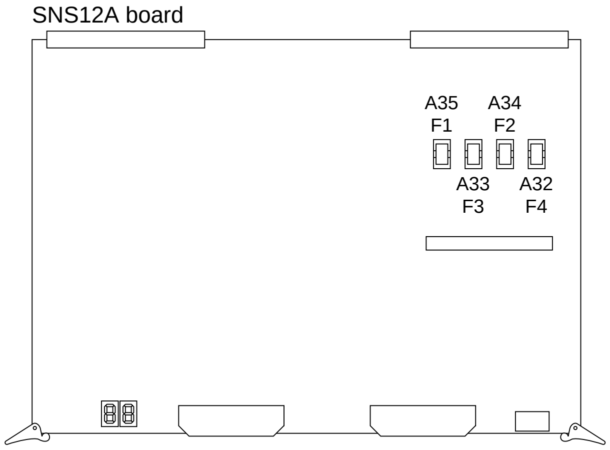
1. Check for shorts between each of the pins and GND → 2Ω or greater.
2. Check for shorts between each of the pins → 2Ω or greater.
3. Check for continuity of each of the pins → 1Ω or less.

### [4] Fuse Locations


MTH12A board
B11
FUSE5
A41
FUSE4
C11
FUSE7
B21
FUSE6
C31
FUSE12
C21
FUSE8
A31
FUSE1
J11
FUSE10
K11
FUSE11
H11
FUSE9
A21
FUSE2
A11
FUSE3

FUSE1-FUSE12: Marked numbers on the board

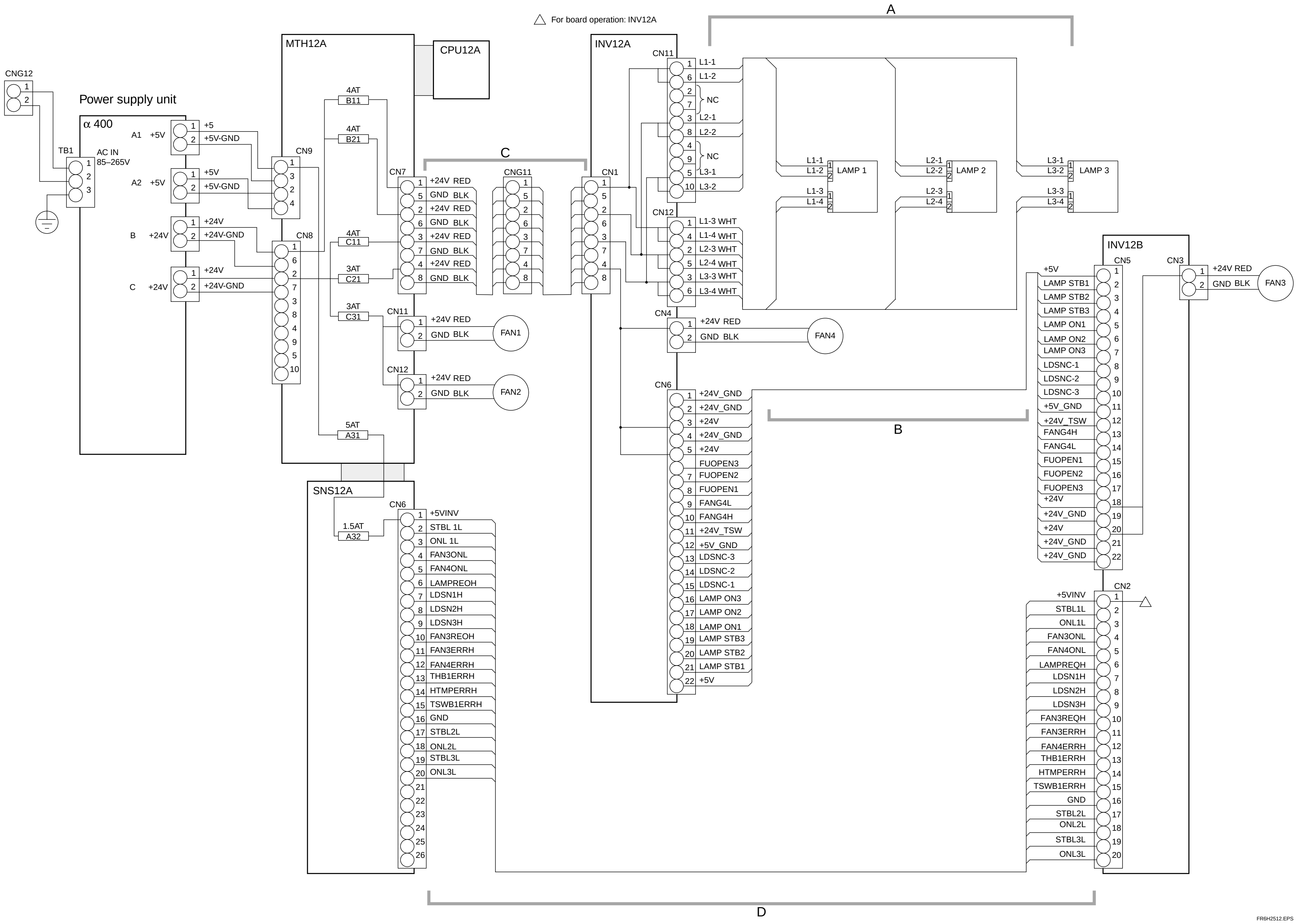
FR6H2507.EPS


SNS12A board
A35
F1
A34
F2
A33
F3
A32
F4

F1-F4: Marked number on the board

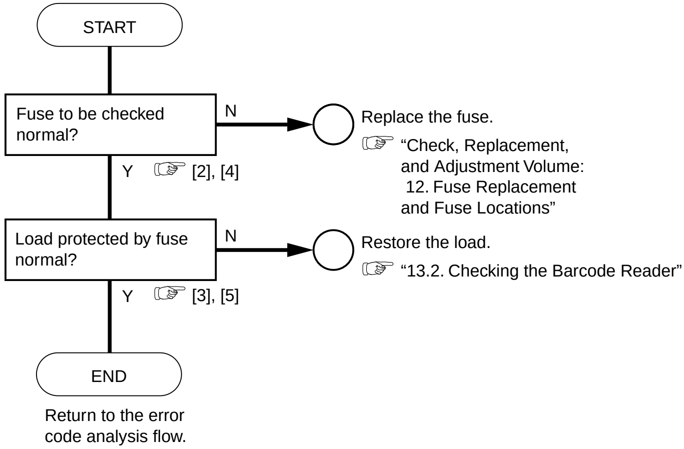
FR6H2509.EPS

## [5] Block Diagram


For board operation: INV12A
A
B
C
D
CNG12
1
2
Power supply unit
α 400
TB1
1
2
3
AC IN
85–265V
A1 +5V
1 +5
2 +5V-GND
A2 +5V
1 +5V
2 +5V-GND
B +24V
1 +24V
2 +24V-GND
C +24V
1 +24V
2 +24V-GND
MTH12A
CPU12A
CN9
1 3 2 4
CN8
1 6 2 7 3 8 4 9 5 10
4AT B11
4AT B21
4AT C11
3AT C21
3AT C31
5AT A31
CN7
1 +24V RED
5 GND BLK
2 +24V RED
6 GND BLK
3 +24V RED
7 GND BLK
4 +24V RED
8 GND BLK
CN11
1 +24V RED
2 GND BLK
FAN1
CN12
1 +24V RED
2 GND BLK
FAN2
CNG11
1 5 2 6 3 7 4 8
INV12A
CN1
1 5 2 6 3 7 4 8
CN11
1 L1-1
6 L1-2
2
7
NC
3 L2-1
8 L2-2
4
9
NC
5 L3-1
10 L3-2
CN12
1 L1-3 WHT
4 L1-4 WHT
2 L2-3 WHT
5 L2-4 WHT
3 L3-3 WHT
6 L3-4 WHT
L1-1
L1-2
L1-3
L1-4
LAMP 1
L2-1
L2-2
L2-3
L2-4
LAMP 2
L3-1
L3-2
L3-3
L3-4
LAMP 3
CN4
1 +24V RED
2 GND BLK
FAN4
CN6
1 +24V_GND
2 +24V_GND
3 +24V
4 +24V_GND
5 +24V
FUOPEN3
7 FUOPEN2
8 FUOPEN1
9 FANG4L
10 FANG4H
11 +24V_TSW
12 +5V_GND
13 LDSNC-3
14 LDSNC-2
15 LDSNC-1
16 LAMP ON3
17 LAMP ON2
18 LAMP ON1
19 LAMP STB3
20 LAMP STB2
21 LAMP STB1
22 +5V
INV12B
CN5
1 +5V
2 LAMP STB1
3 LAMP STB2
4 LAMP STB3
5 LAMP ON1
6 LAMP ON2
7 LAMP ON3
8 LDSNC-1
9 LDSNC-2
10 LDSNC-3
11 +5V_GND
12 +24V_TSW
13 FANG4H
14 FANG4L
15 FUOPEN1
16 FUOPEN2
17 FUOPEN3
18 +24V
19 +24V_GND
20 +24V
21 +24V_GND
22 +24V_GND
CN3
1 +24V RED
2 GND BLK
FAN3
CN2
1 +5VINV
2 STBL1L
3 ONL1L
4 FAN3ONL
5 FAN4ONL
6 LAMPREQH
7 LDSN1H
8 LDSN2H
9 LDSN3H
10 FAN3REQH
11 FAN3ERRH
12 FAN4ERRH
13 THB1ERRH
14 HTMPERRH
15 TSWB1ERRH
16 GND
17 STBL2L
18 ONL2L
19 STBL3L
20 ONL3L
SNS12A
1.5AT A32
CN6
1 +5VINV
2 STBL 1L
3 ONL 1L
4 FAN3ONL
5 FAN4ONL
6 LAMPREOH
7 LDSN1H
8 LDSN2H
9 LDSN3H
10 FAN3REOH
11 FAN3ERRH
12 FAN4ERRH
13 THB1ERRH
14 HTMPERRH
15 TSWB1ERRH
16 GND
17 STBL2L
18 ONL2L
19 STBL3L
20 ONL3L
21 22 23 24 25 26
FR6H2512.EPS

## 10.6 LED12A Board and Barcode Fuses

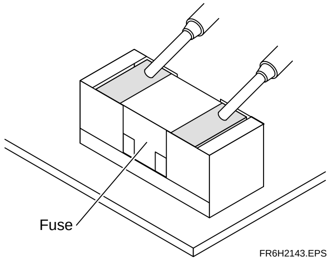
### [1] Analysis Flow


START
Fuse to be checked normal?
N
Replace the fuse.
☞ "Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞ [2], [4]
Load protected by fuse normal?
N
Restore the load.
☞ "13.2. Checking the Barcode Reader"
Y
☞ [3], [5]
END
Return to the error code analysis flow.

FR6H2151.EPS

### [2] Checking the Fuse

Check for continuity as illustrated below.



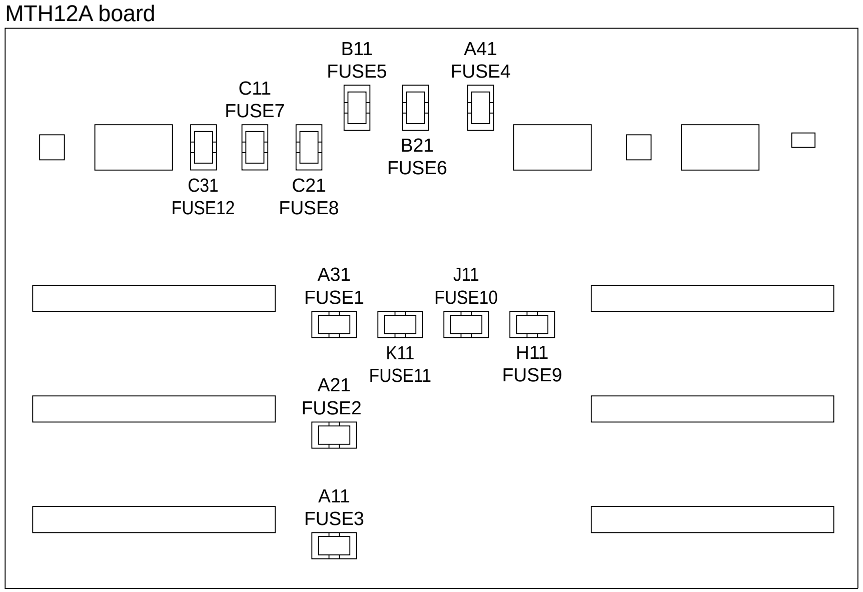
FR6H2143.EPS

### [3] Checking the Cable

Check the following between the portions <A> in the block diagram.

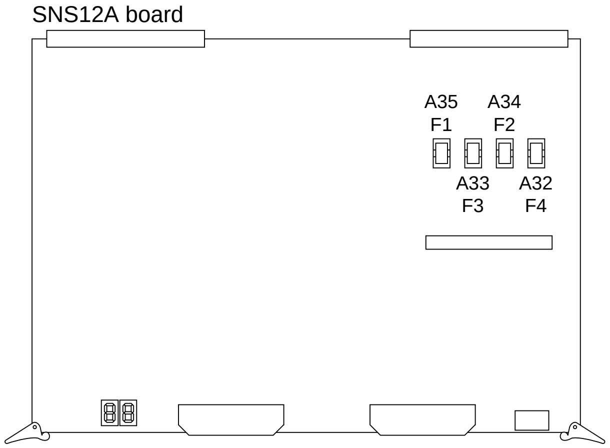
1. Check for shorts between each of the pins and GND → 2Ω or greater.
2. Check for shorts between each of the pins → 2Ω or greater.
3. Check for continuity of each of the pins → 1Ω or less.

### [4] Fuse Locations


MTH12A board
B11
FUSE5
A41
FUSE4
C11
FUSE7
B21
FUSE6
C31
FUSE12
C21
FUSE8
A31
FUSE1
J11
FUSE10
K11
FUSE11
H11
FUSE9
A21
FUSE2
A11
FUSE3

FUSE1-FUSE12: Marked numbers on the board

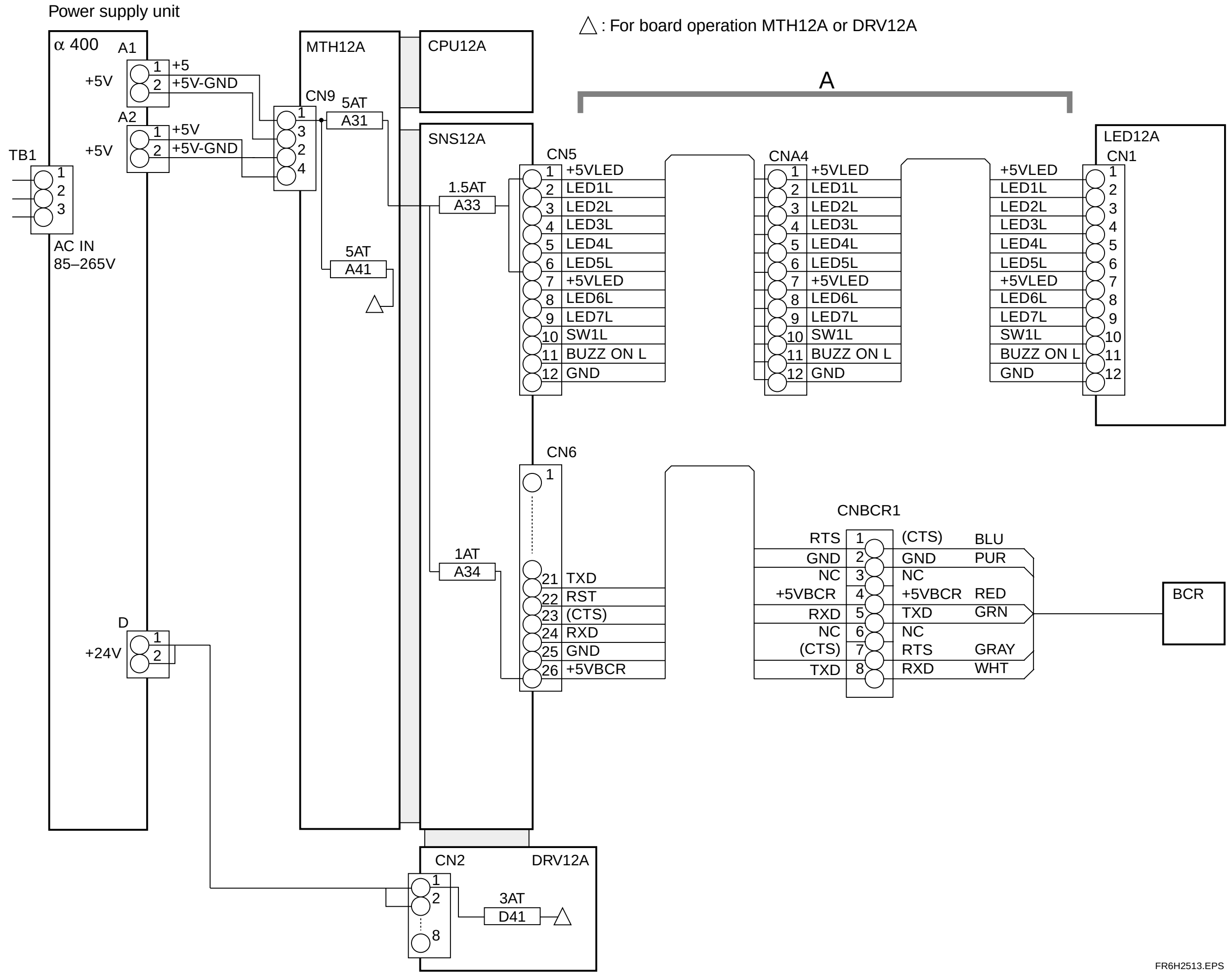
FR6H2507.EPS


SNS12A board
A35
F1
A34
F2
A33
F3
A32
F4

F1-F4: Marked number on the board

FR6H2509.EPS

## [5] Block Diagram


Power supply unit
α 400
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
TB1
1
2
3
AC IN
85–265V
D
+24V
1
2
MTH12A
CN9
1
3
2
4
5AT
A31
5AT
A41
△
CPU12A
SNS12A
1.5AT
A33
1AT
A34
CN5
1 +5VLED
2 LED1L
3 LED2L
4 LED3L
5 LED4L
6 LED5L
7 +5VLED
8 LED6L
9 LED7L
10 SW1L
11 BUZZ ON L
12 GND
A
CNA4
1 +5VLED
2 LED1L
3 LED2L
4 LED3L
5 LED4L
6 LED5L
7 +5VLED
8 LED6L
9 LED7L
10 SW1L
11 BUZZ ON L
12 GND
LED12A
CN1
+5VLED 1
LED1L 2
LED2L 3
LED3L 4
LED4L 5
LED5L 6
+5VLED 7
LED6L 8
LED7L 9
SW1L 10
BUZZ ON L 11
GND 12
CN6
1
21 TXD
22 RST
23 (CTS)
24 RXD
25 GND
26 +5VBCR
CNBCR1
RTS 1 (CTS) BLU
GND 2 GND PUR
NC 3 NC
+5VBCR 4 +5VBCR RED
RXD 5 TXD GRN
NC 6 NC
(CTS) 7 RTS GRAY
TXD 8 RXD WHT
BCR
CN2
DRV12A
1
2
8
3AT
D41
△
FR6H2513.EPS

△: For board operation MTH12A or DRV12A

## 10.7 Board Check Pin Fuses

### [1] TP4 24V Error on the INV12B Board (C21 on the MTH12A Board)

☞ “10.5 Erasure Lamp and Cooling Fan Fuses”

### [2] TP3 24V/15V Error on the DRV12A Board (D41 on the DRV12A Board)

Replace the DRV12A board.

☞ “Check, Replacement, and Adjustment Volume: 11.6 DRV12A Board”

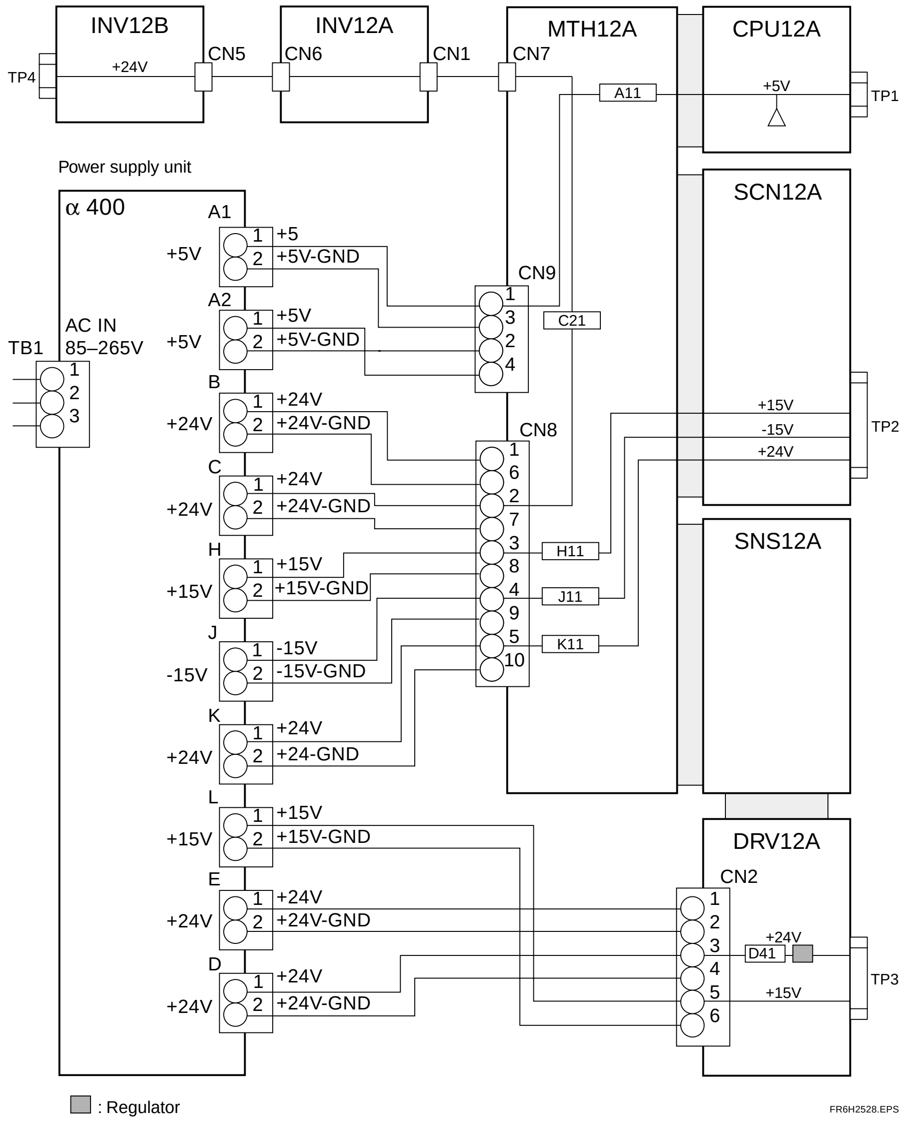
### [3] TP2 15V/-15V/24V Error on the SCN12A Board (H11, J11, K11 on the MTH12A Board)

☞ “10.4 Scanner-Related Fuses”

### [4] TP1 5V Error on the CPU12A Board (A11 on the MTH12A Board)

☞ “10.4 Scanner-Related Fuses”

### [5] Block Diagram


INV12B
+24V
TP4
CN5
INV12A
CN6
CN1
MTH12A
CN7
A11
CPU12A
+5V
TP1
Power supply unit
α 400
TB1
1
2
3
AC IN
85–265V
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
B
+24V
1 +24V
2 +24V-GND
C
+24V
1 +24V
2 +24V-GND
H
+15V
1 +15V
2 +15V-GND
J
-15V
1 -15V
2 -15V-GND
K
+24V
1 +24V
2 +24-GND
L
+15V
1 +15V
2 +15V-GND
E
+24V
1 +24V
2 +24V-GND
D
+24V
1 +24V
2 +24V-GND
CN9
1
3
2
4
C21
CN8
1
6
2
7
3
8
4
9
5
10
H11
J11
K11
SCN12A
+15V
-15V
+24V
TP2
SNS12A
DRV12A
CN2
1
2
3
4
5
6
+24V
D41
+15V
TP3
▨ : Regulator
FR6H2528.EPS

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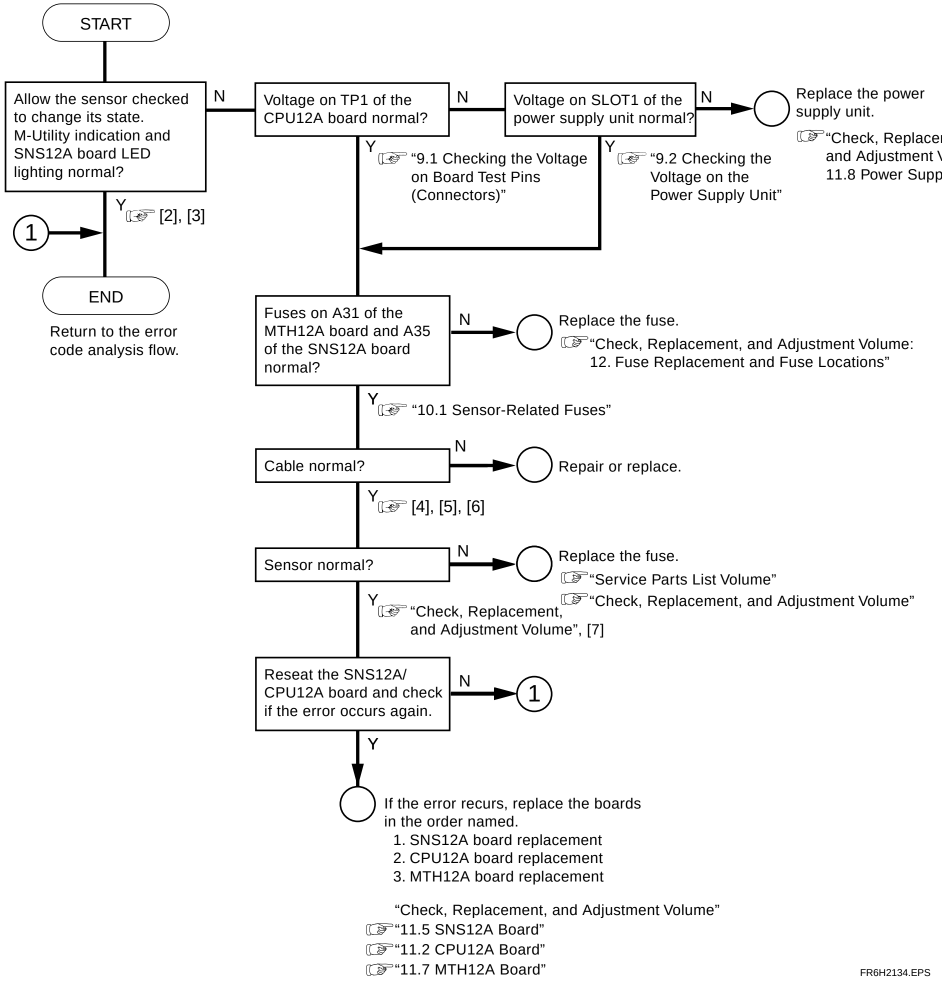
# 11. Checking the Sensors

## 11.1 Checking SA1, SA2, SA3, SA4, SA5, and SB1

### [1] Analysis Flow


START
Allow the sensor checked to change its state. M-Utility indication and SNS12A board LED lighting normal?
N
Voltage on TP1 of the CPU12A board normal?
N
Voltage on SLOT1 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞ "9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y
☞ "9.2 Checking the Voltage on the Power Supply Unit"
Y
☞ [2], [3]
1
END
Return to the error code analysis flow.
Fuses on A31 of the MTH12A board and A35 of the SNS12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞ "10.1 Sensor-Related Fuses"
Cable normal?
N
Repair or replace.
Y
☞ [4], [5], [6]
Sensor normal?
N
Replace the fuse.
☞"Service Parts List Volume"
☞"Check, Replacement, and Adjustment Volume"
Y
☞ "Check, Replacement, and Adjustment Volume", [7]
Reseat the SNS12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. SNS12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2134.EPS

### [2] Monitoring the Sensor in M-Utility

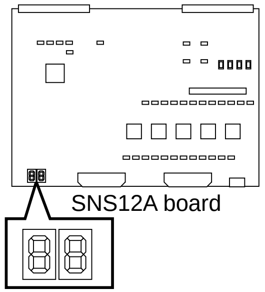
◆ ***CHECK*** ◆

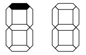
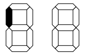
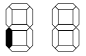
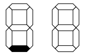
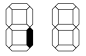
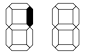
*Make sure that the indication given by the sensor monitoring in M-Utility is consistent with the LED indication.*

[6][ENT] → [3][ENT] → [3][ENT]

Allow the sensor to transition to OPEN/CLOSE and verify that the sensor status on the CL screen changes accordingly.

### [3] LED Lighting


SNS12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | SA1 | Monitors the cassette ejection detection. | CLOSE | OPEN |
|  | SA2 | Monitors the cassette IN detection. | CLOSE | OPEN |
|  | SA3 | Monitors the cassette hold detection. | CLOSE | OPEN |
|  | SA4 | Monitors the suction cup HP detection. | CLOSE | OPEN |
|  | SA5 | Monitors the suction detection. | CLOSE | OPEN |
|  | SB1 | Monitors the cassette inlet IP detection. | CLOSE | OPEN |

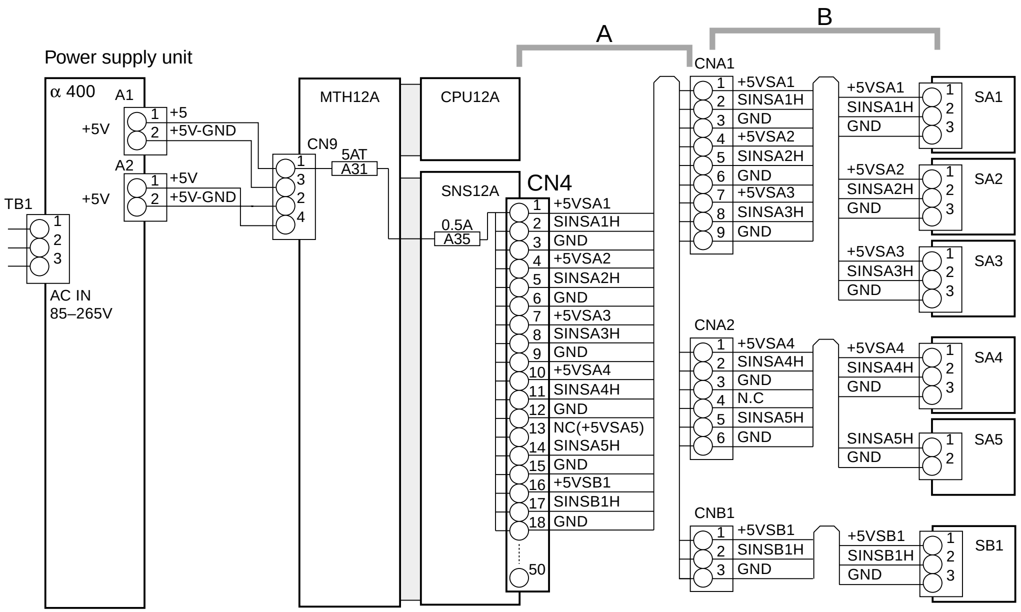
TR6H2004.EPS

## [4] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

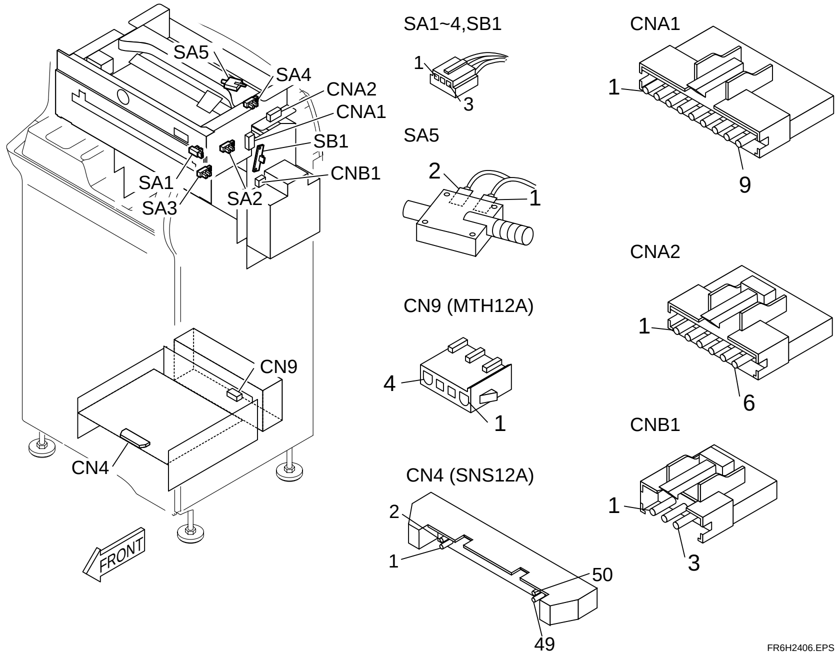
## [5] Block Diagram


A
B
Power supply unit
α 400
A1
A2
+5V
1 +5
2 +5V-GND
1 +5V
2 +5V-GND
TB1
1
2
3
AC IN
85–265V
MTH12A
CN9
1
3
2
4
5AT
A31
CPU12A
SNS12A
0.5A
A35
CN4
1 +5VSA1
2 SINSA1H
3 GND
4 +5VSA2
5 SINSA2H
6 GND
7 +5VSA3
8 SINSA3H
9 GND
10 +5VSA4
11 SINSA4H
12 GND
13 NC(+5VSA5)
14 SINSA5H
15 GND
16 +5VSB1
17 SINSB1H
18 GND
50
CNA1
1 +5VSA1
2 SINSA1H
3 GND
4 +5VSA2
5 SINSA2H
6 GND
7 +5VSA3
8 SINSA3H
9 GND
CNA2
1 +5VSA4
2 SINSA4H
3 GND
4 N.C
5 SINSA5H
6 GND
CNB1
1 +5VSB1
2 SINSB1H
3 GND
+5VSA1
SINSA1H
GND
SA1
+5VSA2
SINSA2H
GND
SA2
+5VSA3
SINSA3H
GND
SA3
+5VSA4
SINSA4H
GND
SA4
SINSA5H
GND
SA5
+5VSB1
SINSB1H
GND
SB1

FR6H2026.EPS

Check point: Pins 1-18 on CN4 of the SNS12A board

## [6] Connector Pin Numbers


SA5
SA4
CNA2
CNA1
SB1
CNB1
SA1
SA3
SA2
CN9
CN4
FRONT
SA1~4,SB1
1
3
SA5
2
1
CN9 (MTH12A)
4
1
CN4 (SNS12A)
2
1
50
49
CNA1
1
9
CNA2
1
6
CNB1
1
3

FR6H2406.EPS

## [7] Checking Sensor Operation

◆ ***CHECK*** ◆

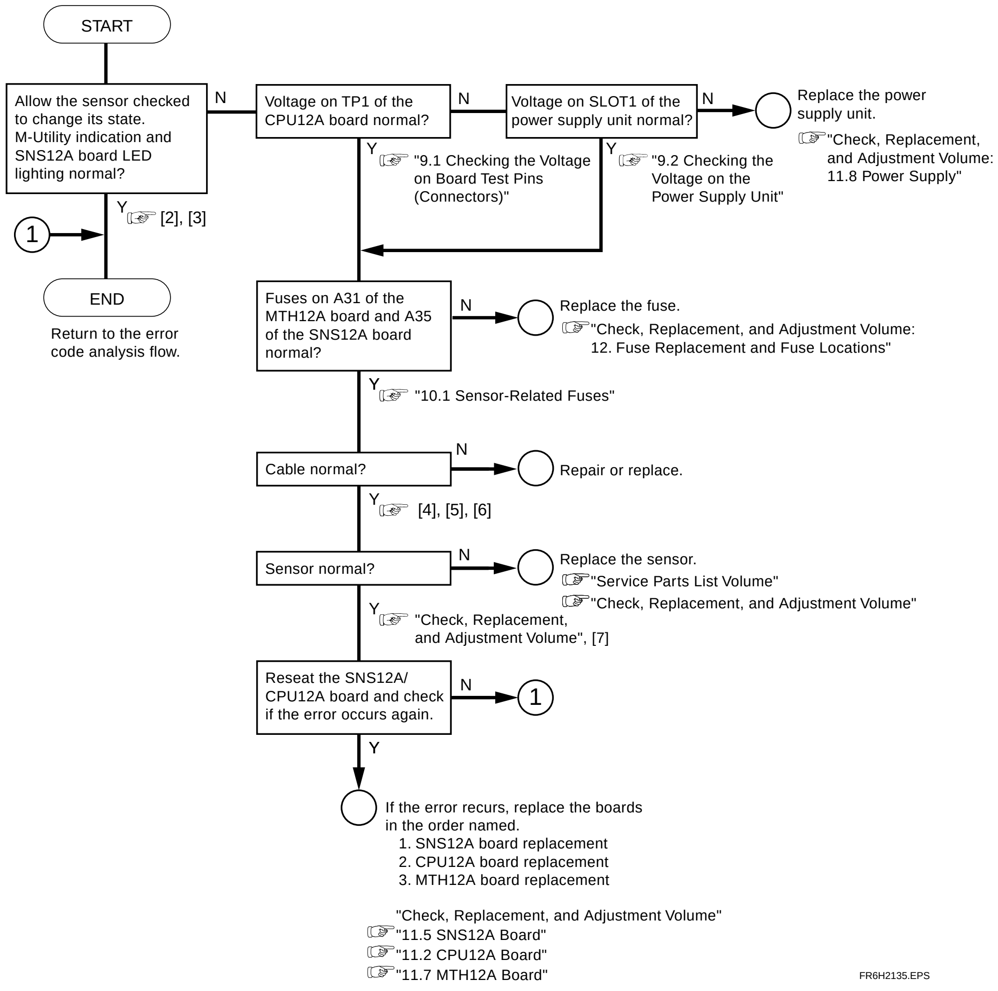
*Make sure that the indication given by the sensor monitoring in M-Utility is consistent with the LED indication.*

[6][ENT] → [3][ENT] → [3][ENT]

Allow the sensor to transition to OPEN/CLOSE and verify that the sensor status on the CL screen changes accordingly.

## 11.2 Checking SC1, SC2, SC3, and SC4

### [1] Analysis Flow


START
Allow the sensor checked to change its state. M-Utility indication and SNS12A board LED lighting normal?
N
Voltage on TP1 of the CPU12A board normal?
N
Voltage on SLOT1 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y ☞ "9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y ☞ "9.2 Checking the Voltage on the Power Supply Unit"
Y ☞ [2], [3]
1
END
Return to the error code analysis flow.
Fuses on A31 of the MTH12A board and A35 of the SNS12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y ☞ "10.1 Sensor-Related Fuses"
Cable normal?
N
Repair or replace.
Y ☞ [4], [5], [6]
Sensor normal?
N
Replace the sensor.
☞"Service Parts List Volume"
☞"Check, Replacement, and Adjustment Volume"
Y ☞ "Check, Replacement, and Adjustment Volume", [7]
Reseat the SNS12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. SNS12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2135.EPS

### [2] Checking by Use of M-Utility

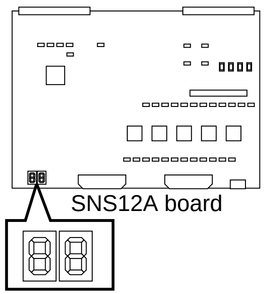
**◆ *CHECK* ◆**

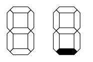
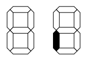
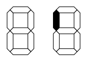
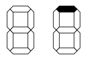
*Make sure that the indication given by the sensor monitoring in M-Utility is consistent with the LED indication.*

[6][ENT] → [3][ENT] → [3][ENT]

Allow the sensor to transition to OPEN/CLOSE and verify that the sensor status on the CL screen changes accordingly.

### [3] LED Lighting


SNS12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | SC1 | Monitors the side-positioning HP detection. | CLOSE | OPEN |
|  | SC2 | Monitors the grip release HP detection. | CLOSE | OPEN |
|  | SC3 | Monitors the side-positioning IP detection. | CLOSE | OPEN |
|  | SC4 | Monitors the erasure positioning IP detection. | CLOSE | OPEN |

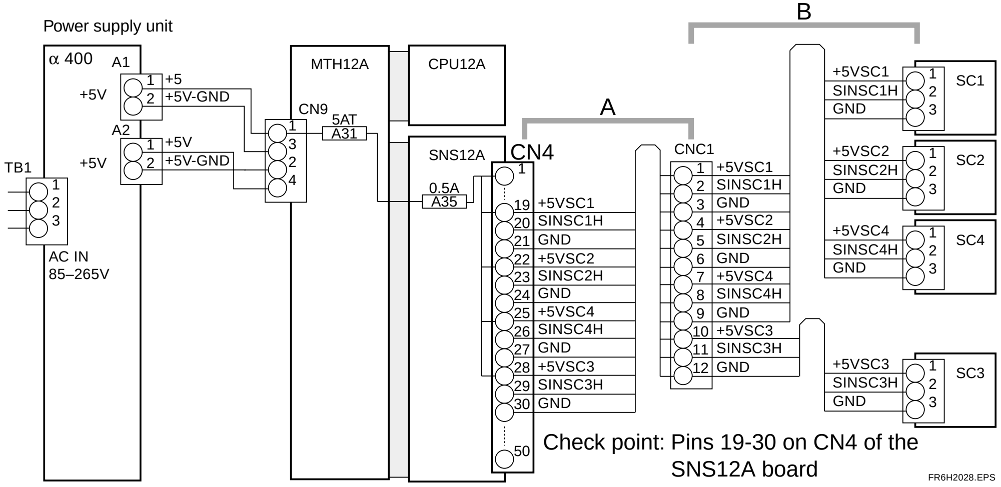
TR6H2006.EPS

## [4] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

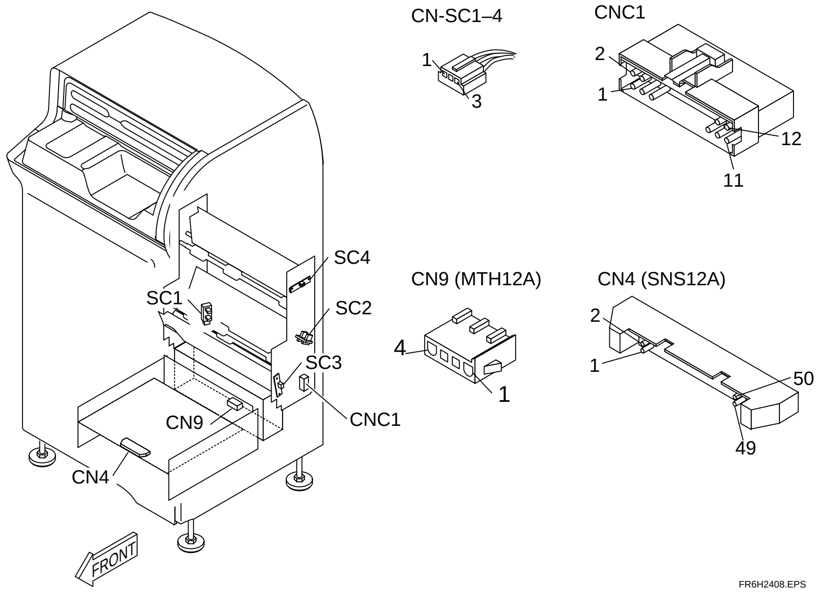
## [5] Block Diagram



Power supply unit
α 400
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
TB1
1
2
3
AC IN
85–265V
MTH12A
CN9
1
3
2
4
5AT
A31
CPU12A
SNS12A
0.5A
A35
CN4
1
19 +5VSC1
20 SINSC1H
21 GND
22 +5VSC2
23 SINSC2H
24 GND
25 +5VSC4
26 SINSC4H
27 GND
28 +5VSC3
29 SINSC3H
30 GND
50
A
B
CNC1
1 +5VSC1
2 SINSC1H
3 GND
4 +5VSC2
5 SINSC2H
6 GND
7 +5VSC4
8 SINSC4H
9 GND
10 +5VSC3
11 SINSC3H
12 GND
+5VSC1
SINSC1H
GND
SC1
+5VSC2
SINSC2H
GND
SC2
+5VSC4
SINSC4H
GND
SC4
+5VSC3
SINSC3H
GND
SC3
1
2
3
FR6H2028.EPS

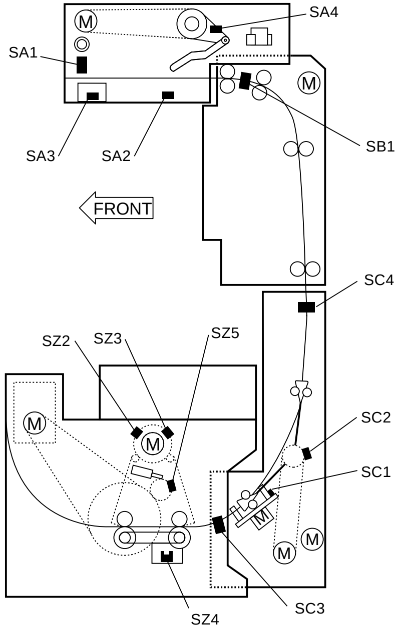
Check point: Pins 19-30 on CN4 of the SNS12A board

## [6] Connector Pin Numbers



SC4
SC1
SC2
SC3
CN9
CNC1
CN4
FRONT
CN-SC1–4
1
3
CNC1
2
1
12
11
CN9 (MTH12A)
4
1
CN4 (SNS12A)
2
1
50
49
FR6H2408.EPS

## [7] Checking Sensor Operation



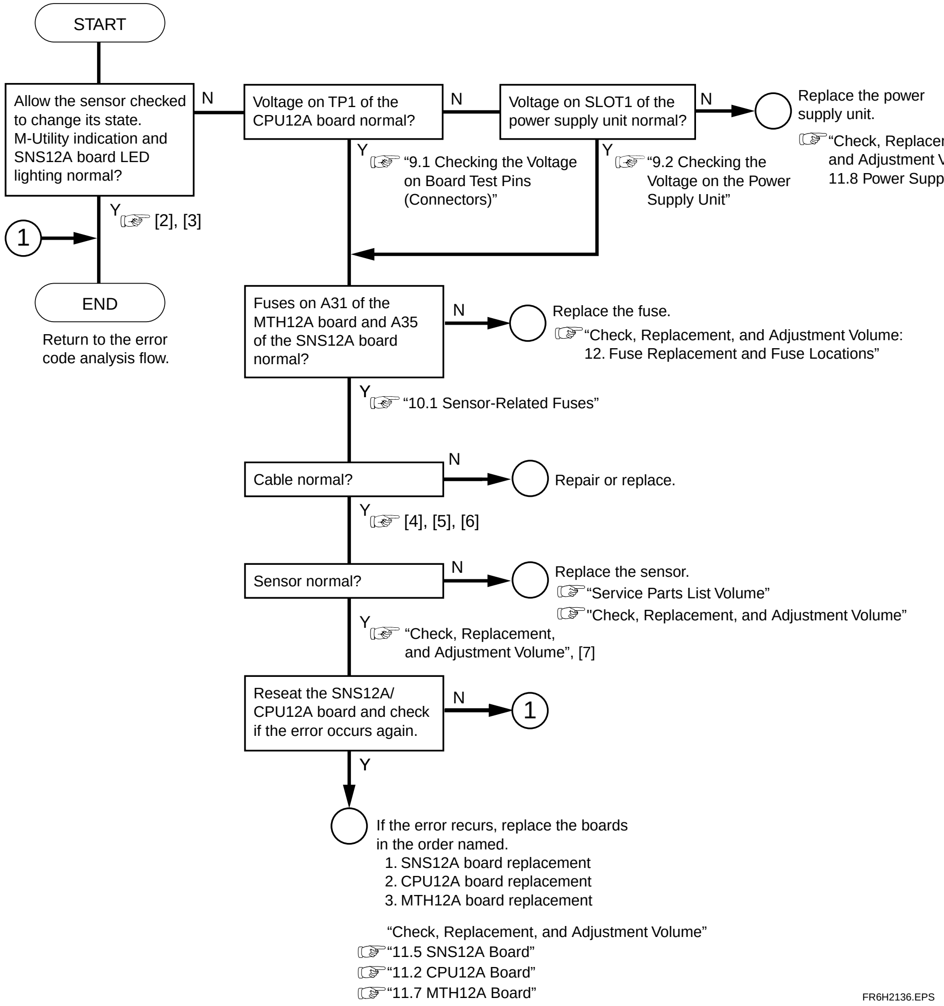
SA4
SA1
M
SB1
SA3
SA2
FRONT
SC4
SZ2
SZ3
SZ5
SC2
SC1
SZ4
SC3
M

| Symbol | Name | Type |
|---|---|---|
| SA1 | Cassette ejection sensor | PI (5mm) |
| SA2 | Cassette IN sensor | PI (5mm) |
| SA3 | Hold sensor | PI (5mm) |
| SA4 | Suction cup HP sensor | PI (5mm) |
| SB1 | IP sensor | PI (19mm) |
| SC1 | Side-positioning HP sensor | PI (5mm) |
| SC2 | Grip HP sensor | PI (5mm) |
| SC3 | IP sensor | PI (19mm) |
| SC4 | IP sensor | PI (19mm) |
| SZ2 | Driving-side grip operation sensor | PI (5mm) |
| SZ3 | Driven-side grip operation sensor | PI (5mm) |
| SZ4 | IP stopper HP sensor | PI (5mm) |
| SZ5 | Dust removal HP sensor | PI (5mm) |

FR6H2042.EPS

# 11.3 Checking SZ2, SZ3, SZ4, and SZ5

## [1] Analysis Flow


START
Allow the sensor checked to change its state. M-Utility indication and SNS12A board LED lighting normal?
N
Voltage on TP1 of the CPU12A board normal?
N
Voltage on SLOT1 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y ☞ "9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y ☞ "9.2 Checking the Voltage on the Power Supply Unit"
Y ☞ [2], [3]
1
END
Return to the error code analysis flow.
Fuses on A31 of the MTH12A board and A35 of the SNS12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y ☞ "10.1 Sensor-Related Fuses"
Cable normal?
N
Repair or replace.
Y ☞ [4], [5], [6]
Sensor normal?
N
Replace the sensor.
☞"Service Parts List Volume"
☞"Check, Replacement, and Adjustment Volume"
Y ☞ "Check, Replacement, and Adjustment Volume", [7]
Reseat the SNS12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. SNS12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.5 SNS12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2136.EPS

## [2] Checking by Use of M-Utility

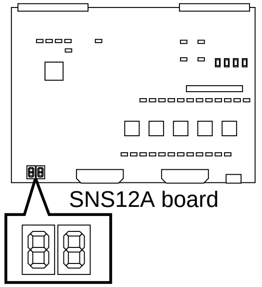
◆ **CHECK** ◆

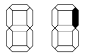
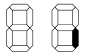
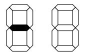
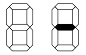
*Make sure that the indication given by the sensor monitoring in M-Utility is consistent with the LED indication.*

[6][ENT] → [3][ENT] → [3][ENT]

Allow the sensor to transition to OPEN/CLOSE and verify that the sensor status on the CL screen changes accordingly.

## [3] LED Lighting


SNS12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | SZ2 | Monitors the driving-side grip release HP detection. | CLOSE | OPEN |
|  | SZ3 | Monitors the driven-side grip release HP detection. | CLOSE | OPEN |
|  | SZ4 | Monitors the IP stopper HP detection. | CLOSE | OPEN |
|  | SZ5 | Monitors the dust removal HP detection. | CLOSE | OPEN |

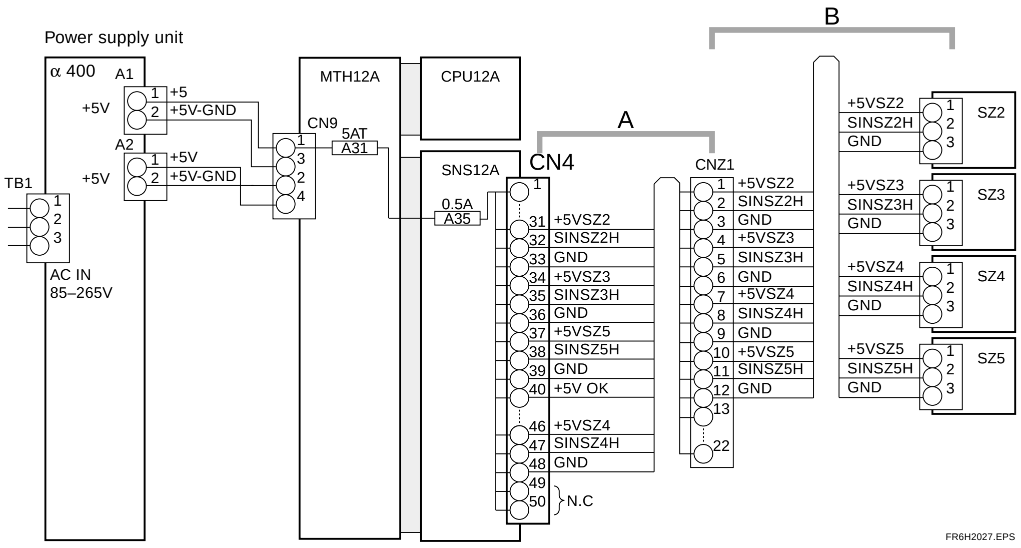
TR6H2005.EPS

## [4] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

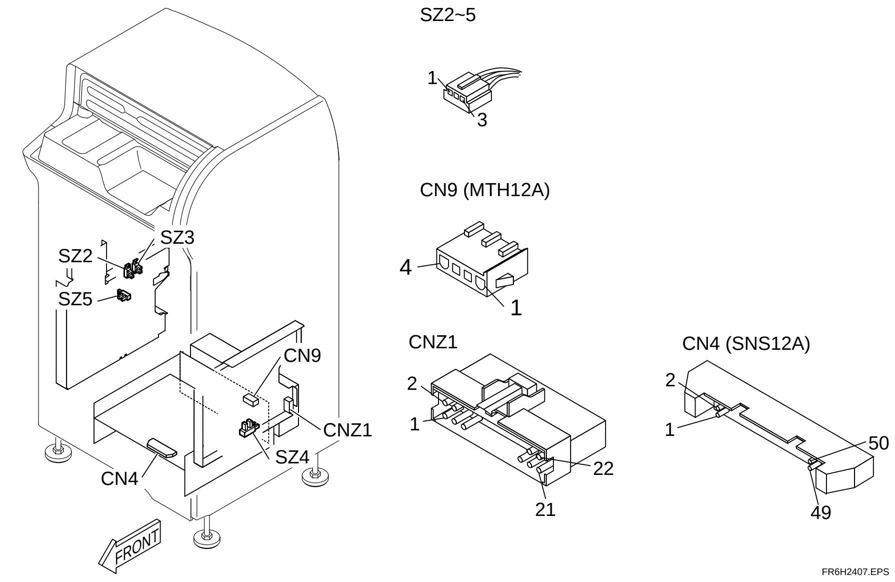
1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [5] Block Diagram


Power supply unit
α 400
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
TB1
1
2
3
AC IN
85–265V
MTH12A
CN9
1
3
2
4
5AT
A31
CPU12A
SNS12A
0.5A
A35
CN4
1
31 +5VSZ2
32 SINSZ2H
33 GND
34 +5VSZ3
35 SINSZ3H
36 GND
37 +5VSZ5
38 SINSZ5H
39 GND
40 +5V OK
46 +5VSZ4
47 SINSZ4H
48 GND
49
50
N.C
A
B
CNZ1
1 +5VSZ2
2 SINSZ2H
3 GND
4 +5VSZ3
5 SINSZ3H
6 GND
7 +5VSZ4
8 SINSZ4H
9 GND
10 +5VSZ5
11 SINSZ5H
12 GND
13
22
+5VSZ2
SINSZ2H
GND
SZ2
+5VSZ3
SINSZ3H
GND
SZ3
+5VSZ4
SINSZ4H
GND
SZ4
+5VSZ5
SINSZ5H
GND
SZ5
1
2
3

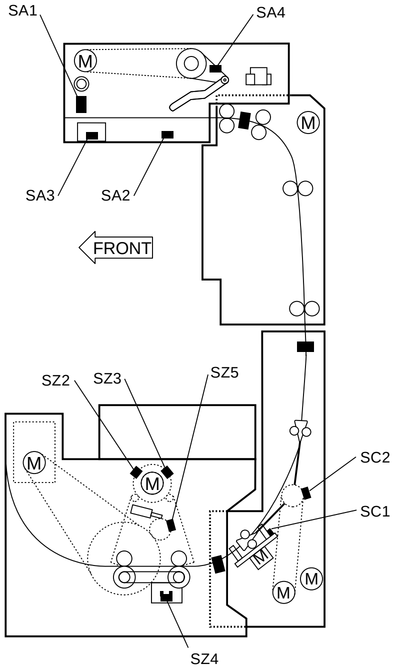
FR6H2027.EPS

## [6] Connector Pin Numbers


SZ2~5
1
3
CN9 (MTH12A)
4
1
CNZ1
2
1
22
21
CN4 (SNS12A)
2
1
50
49
SZ2
SZ3
SZ5
CN9
CNZ1
SZ4
CN4
FRONT

FR6H2407.EPS

## [7] Checking Sensor Operation


SA1
SA4
M
SA3
SA2
FRONT
SZ2
SZ3
SZ5
SC2
SC1
SZ4

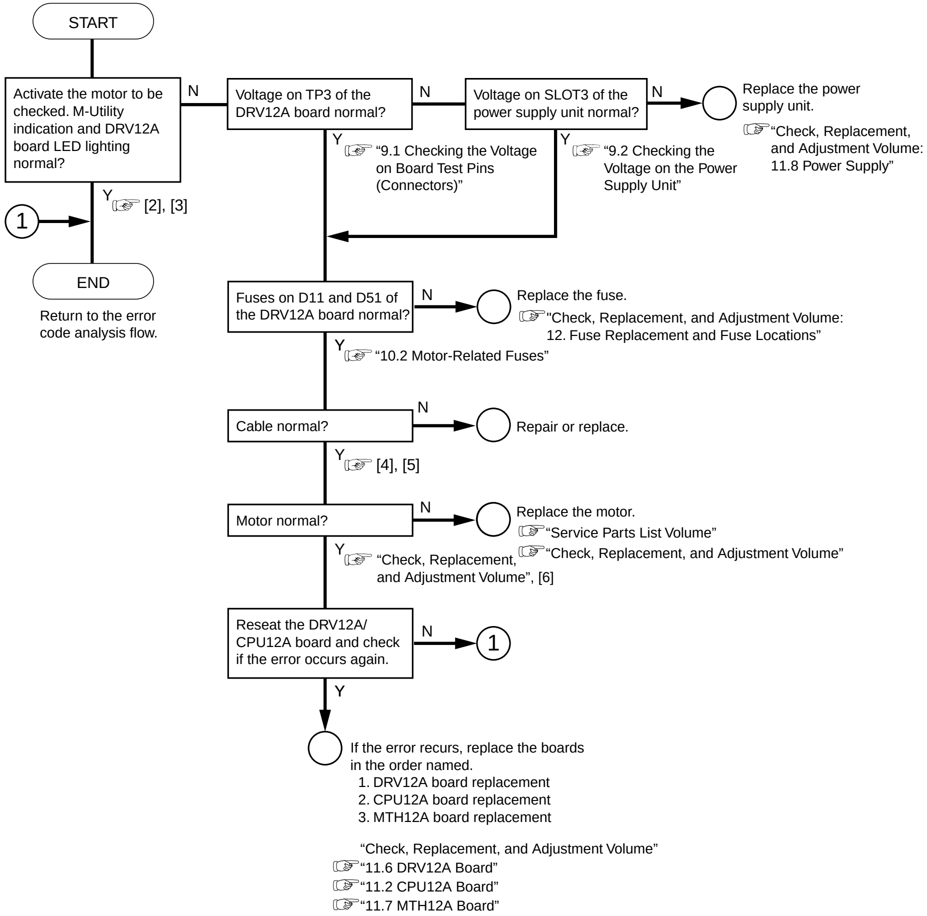
| Symbol | Name | Type |
|---|---|---|
| SA1 | Cassette ejection sensor | PI (5mm) |
| SA2 | Cassette IN sensor | PI (5mm) |
| SA3 | Hold sensor | PI (5mm) |
| SA4 | Suction cup HP sensor | PI (5mm) |
| SC1 | Side-positioning HP sensor | PI (5mm) |
| SC2 | Grip HP sensor | PI (5mm) |
| SZ2 | Driving-side grip operation sensor | PI (5mm) |
| SZ3 | Driven-side grip operation sensor | PI (5mm) |
| SZ4 | IP stopper HP sensor | PI (5mm) |
| SZ5 | Dust removal HP sensor | PI (5mm) |

FR6H2003.EPS

# 12. Checking the Motors

## 12.1 Checking MA1 and MB1

### [1] Analysis Flow


START
Activate the motor to be checked. M-Utility indication and DRV12A board LED lighting normal?
N
Voltage on TP3 of the DRV12A board normal?
N
Voltage on SLOT3 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y ☞ "9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y ☞ "9.2 Checking the Voltage on the Power Supply Unit"
Y ☞ [2], [3]
1
END
Return to the error code analysis flow.
Fuses on D11 and D51 of the DRV12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y ☞ "10.2 Motor-Related Fuses"
Cable normal?
N
Repair or replace.
Y ☞ [4], [5]
Motor normal?
N
Replace the motor.
☞"Service Parts List Volume"
☞"Check, Replacement, and Adjustment Volume"
Y ☞ "Check, Replacement, and Adjustment Volume", [6]
Reseat the DRV12A/CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. DRV12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2137.EPS

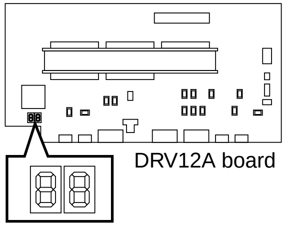
### [2] Checking by Use of M-Utility

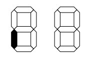
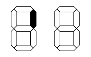
**◆ *CHECK* ◆**

*Make sure that M-Utility diagnostics indication and operating sound are generated and a consistent LED indication is given.*

[6] [ENT] → [1] [ENT] → [1] [ENT]

### [3] LED Lighting


DRV12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | MA1 | Monitors the suction cup driving motor control signal. | Drive | Stop |
|  | MB1 | Monitors the IP transport motor control signal. | Drive | Stop |

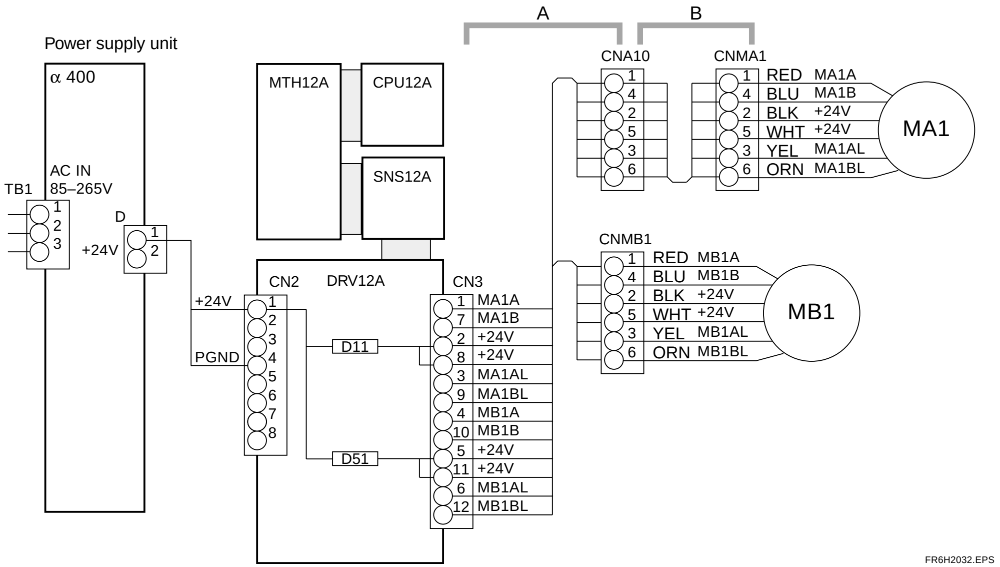
TR6H2010.EPS

## [4] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

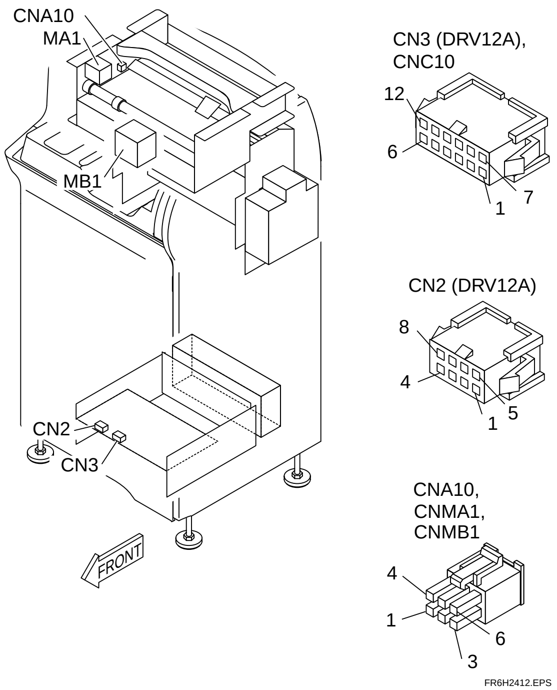
1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [5] Block Diagram


A
B
Power supply unit
α 400
AC IN
85–265V
TB1
1
2
3
D
1
2
+24V
MTH12A
CPU12A
SNS12A
CN2
DRV12A
CN3
+24V
PGND
1 2 3 4 5 6 7 8
D11
D51
1 MA1A
7 MA1B
2 +24V
8 +24V
3 MA1AL
9 MA1BL
4 MB1A
10 MB1B
5 +24V
11 +24V
6 MB1AL
12 MB1BL
CNA10
1 4 2 5 3 6
CNMA1
1 RED MA1A
4 BLU MA1B
2 BLK +24V
5 WHT +24V
3 YEL MA1AL
6 ORN MA1BL
MA1
CNMB1
1 RED MB1A
4 BLU MB1B
2 BLK +24V
5 WHT +24V
3 YEL MB1AL
6 ORN MB1BL
MB1

FR6H2032.EPS

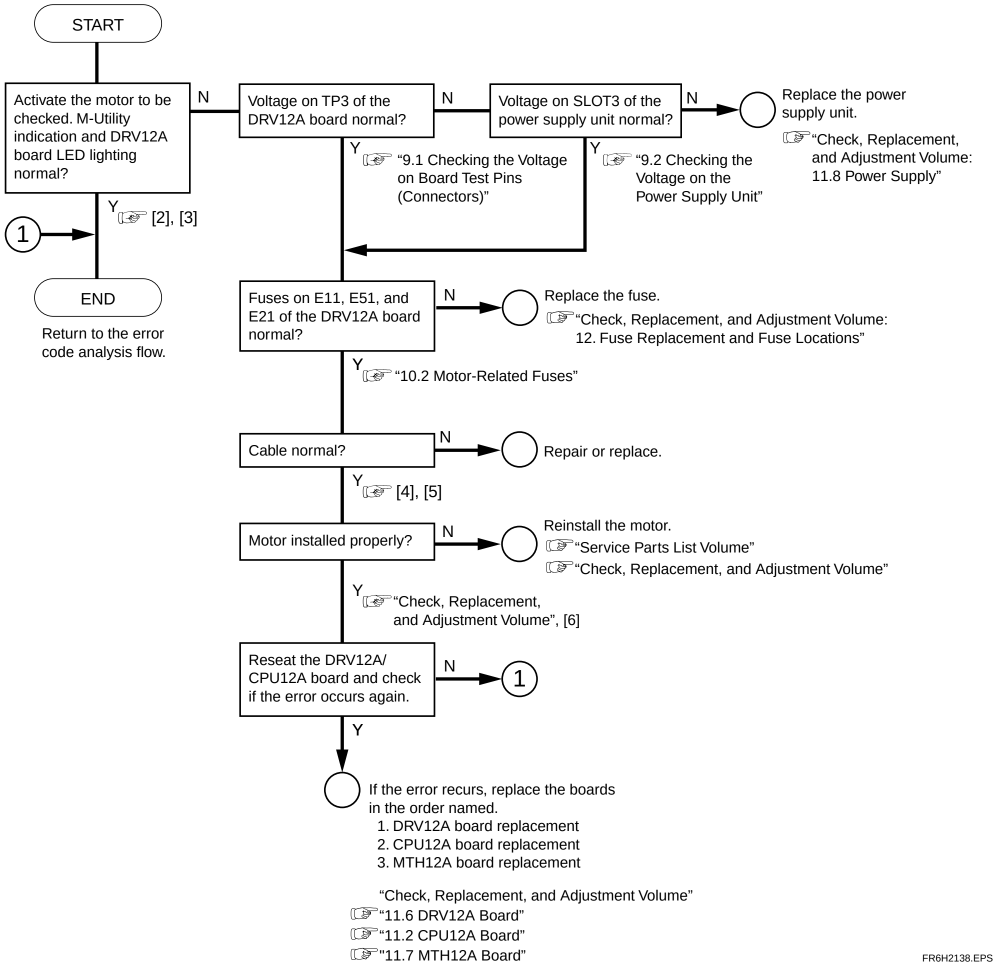
## [6] Checking Motor Operation


CNA10
MA1
MB1
CN2
CN3
FRONT
CN3 (DRV12A),
CNC10
12
6
1
7
CN2 (DRV12A)
8
4
1
5
CNA10,
CNMA1,
CNMB1
4
1
6
3

FR6H2412.EPS

# 12.2 Checking MC1, MC2, and MC3

## [1] Analysis Flow


START
Activate the motor to be checked. M-Utility indication and DRV12A board LED lighting normal?
N
Voltage on TP3 of the DRV12A board normal?
N
Voltage on SLOT3 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞ "9.2 Checking the Voltage on the Power Supply Unit"
Y
☞ "9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y
☞ [2], [3]
1
END
Return to the error code analysis flow.
Fuses on E11, E51, and E21 of the DRV12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞ "10.2 Motor-Related Fuses"
Cable normal?
N
Repair or replace.
Y
☞ [4], [5]
Motor installed properly?
N
Reinstall the motor.
☞"Service Parts List Volume"
☞"Check, Replacement, and Adjustment Volume"
Y
☞"Check, Replacement, and Adjustment Volume", [6]
Reseat the DRV12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. DRV12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2138.EPS

## [2] Checking by Use of M-Utility

**◆ *CHECK* ◆**

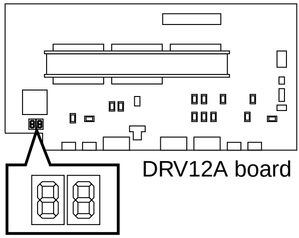
---

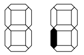
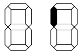
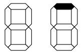
*Make sure that M-Utility diagnostics indication and operating sound are generated and a consistent LED indication is given.*

---

[6] [ENT] → [1] [ENT] → [1] [ENT]

## [3] LED Lighting


DRV12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | MC1 | Monitors the side-positioning motor control signal. | Drive | Stop |
|  | MC2 | Monitors the grip release motor control signal. | Drive | Stop |
|  | MC3 | Monitors the IP transport motor control signal. | Drive | Stop |

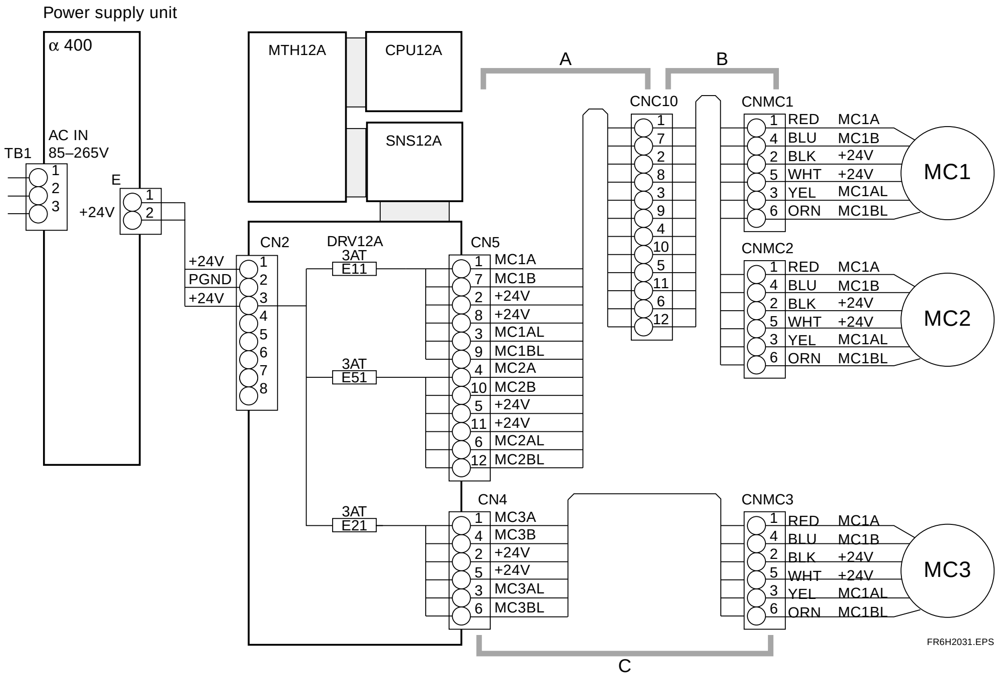
TR6H2009.EPS

## [4] Checking the Cable

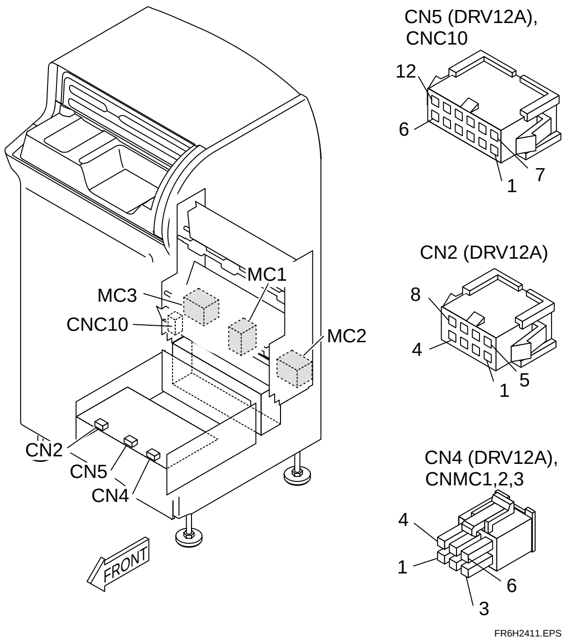
Check the following between the portions <A and B> in the block diagram.

1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [5] Block Diagram

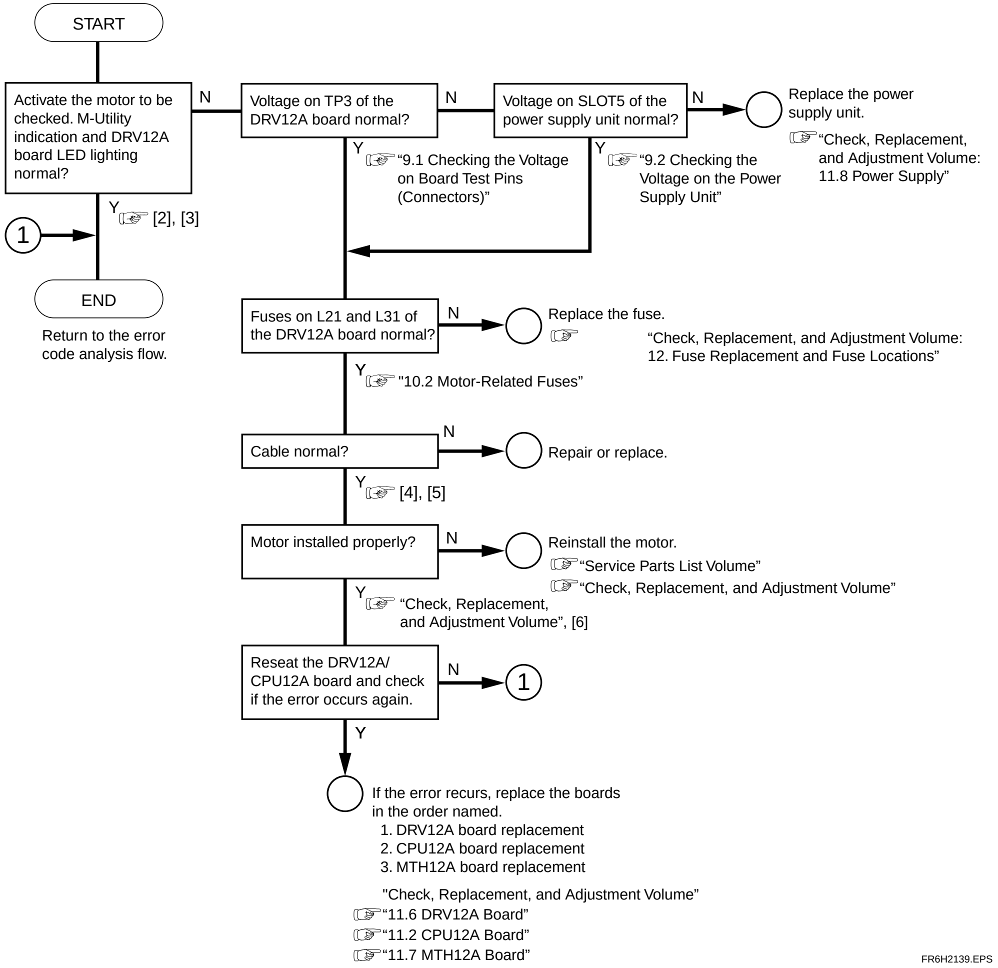

Power supply unit
α 400
AC IN
85–265V
TB1
1
2
3
E
1
2
+24V
MTH12A
CPU12A
SNS12A
A
B
CNC10
CNMC1
+24V
PGND
+24V
CN2
DRV12A
3AT
E11
CN5
1 MC1A
7 MC1B
2 +24V
8 +24V
3 MC1AL
9 MC1BL
4 MC2A
10 MC2B
5 +24V
11 +24V
6 MC2AL
12 MC2BL
3AT
E51
3AT
E21
CN4
1 MC3A
4 MC3B
2 +24V
5 +24V
3 MC3AL
6 MC3BL
1 RED MC1A
4 BLU MC1B
2 BLK +24V
5 WHT +24V
3 YEL MC1AL
6 ORN MC1BL
MC1
CNMC2
MC2
CNMC3
MC3
C
FR6H2031.EPS

## [6] Checking Motor Operation


MC3
CNC10
MC1
MC2
CN2
CN5
CN4
FRONT
CN5 (DRV12A),
CNC10
12
6
1
7
CN2 (DRV12A)
8
4
1
5
CN4 (DRV12A),
CNMC1,2,3
4
1
3
6
FR6H2411.EPS

## 12.3 Checking MZ2 and MZ3

### [1] Analysis Flow


START
Activate the motor to be checked. M-Utility indication and DRV12A board LED lighting normal?
N
Voltage on TP3 of the DRV12A board normal?
N
Voltage on SLOT5 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y ☞"9.2 Checking the Voltage on the Power Supply Unit"
Y ☞"9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y ☞ [2], [3]
1
END
Return to the error code analysis flow.
Fuses on L21 and L31 of the DRV12A board normal?
N
Replace the fuse.
☞ "Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y ☞ "10.2 Motor-Related Fuses"
Cable normal?
N
Repair or replace.
Y ☞ [4], [5]
Motor installed properly?
N
Reinstall the motor.
☞"Service Parts List Volume"
☞"Check, Replacement, and Adjustment Volume"
Y ☞ "Check, Replacement, and Adjustment Volume", [6]
Reseat the DRV12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. DRV12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

FR6H2139.EPS

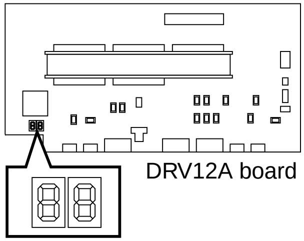
### [2] Checking by Use of M-Utility

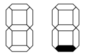
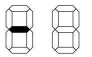
◆ ***CHECK*** ◆

*Make sure that M-Utility diagnostics indication, motor operation, and LED indication are consistent.*

[6] [ENT] → [1] [ENT] → [1] [ENT]

### [3] LED Lighting


DRV12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | MZ2 | Monitors the grip release motor drive signal. | Drive | Stop |
|  | MZ3 | Monitors dust removal motor drive signal. | Drive | Stop |

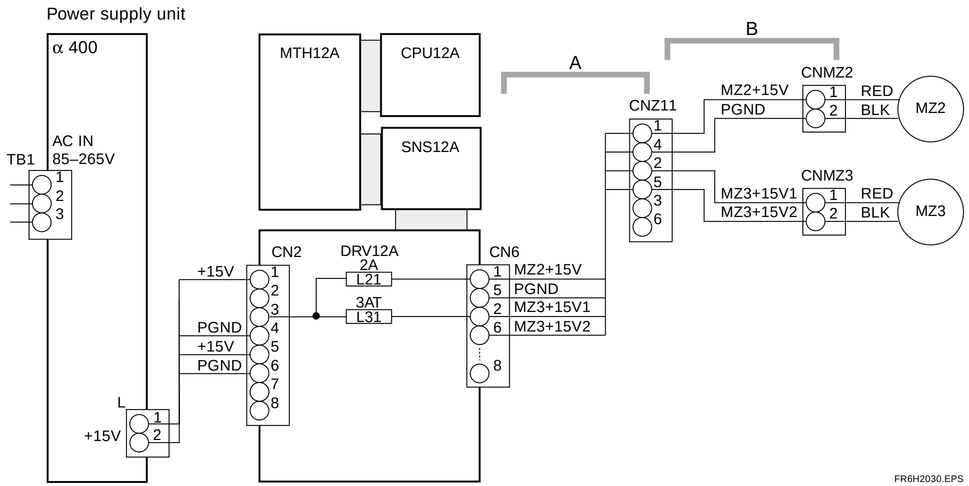
TR6H2008.EPS

## [4] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

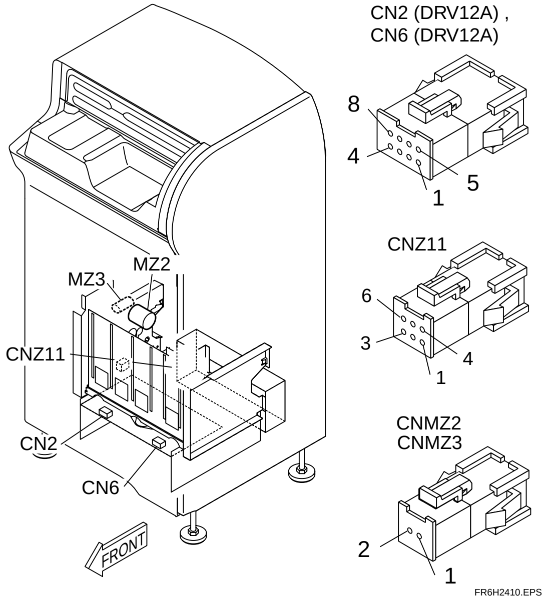
1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [5] Block Diagram


Power supply unit
α 400
TB1
AC IN
85–265V
1
2
3
L
+15V
1
2
MTH12A
CPU12A
SNS12A
CN2
DRV12A
+15V
PGND
+15V
PGND
1
2
3
4
5
6
7
8
2A
L21
3AT
L31
CN6
1
5
2
6
8
MZ2+15V
PGND
MZ3+15V1
MZ3+15V2
A
B
CNZ11
1
4
2
5
3
6
MZ2+15V
PGND
CNMZ2
1
2
RED
BLK
MZ2
MZ3+15V1
MZ3+15V2
CNMZ3
1
2
RED
BLK
MZ3

FR6H2030.EPS

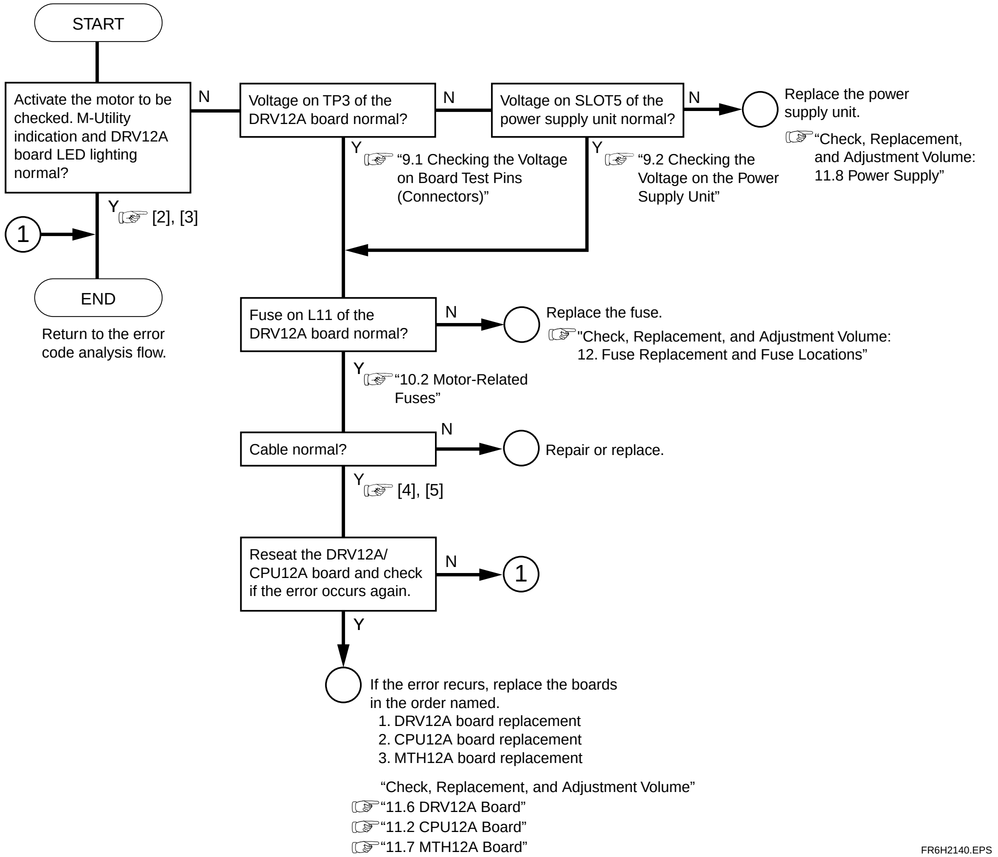
## [6] Connector Locations


CN2 (DRV12A) ,
CN6 (DRV12A)
8
4
1
5
CNZ11
6
3
1
4
CNMZ2
CNMZ3
2
1
MZ3
MZ2
CNZ11
CN2
CN6
FRONT

FR6H2410.EPS

## 12.4 Checking the FFM12A Board

### [1] Analysis Flow


START
Activate the motor to be checked. M-Utility indication and DRV12A board LED lighting normal?
N
Voltage on TP3 of the DRV12A board normal?
N
Voltage on SLOT5 of the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞"9.1 Checking the Voltage on Board Test Pins (Connectors)"
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Y
☞[2], [3]
1
END
Return to the error code analysis flow.
Fuse on L11 of the DRV12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞"10.2 Motor-Related Fuses"
Cable normal?
N
Repair or replace.
Y
☞[4], [5]
Reseat the DRV12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. DRV12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞"11.6 DRV12A Board"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"
FR6H2140.EPS

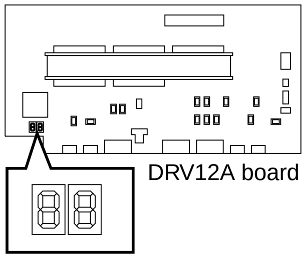
### [2] Checking by Use of M-Utility

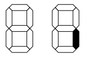
**◆ *CHECK* ◆**

*Make sure that the indication given by the sensor monitoring in M-Utility is consistent with the LED indication.*

[6] [ENT] → [1] [ENT] → [1] [ENT]

### [3] LED Lighting


DRV12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | FFM | Monitors the FFM motor drive signal. | Drive | Stop |

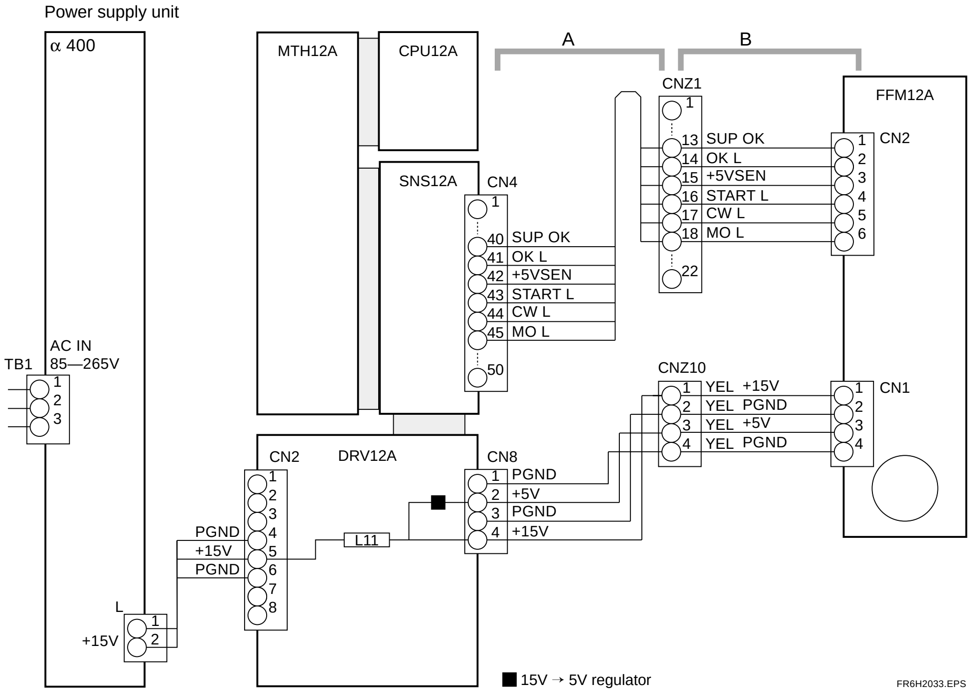
TR6H2022.EPS

## [4] Checking the Cable

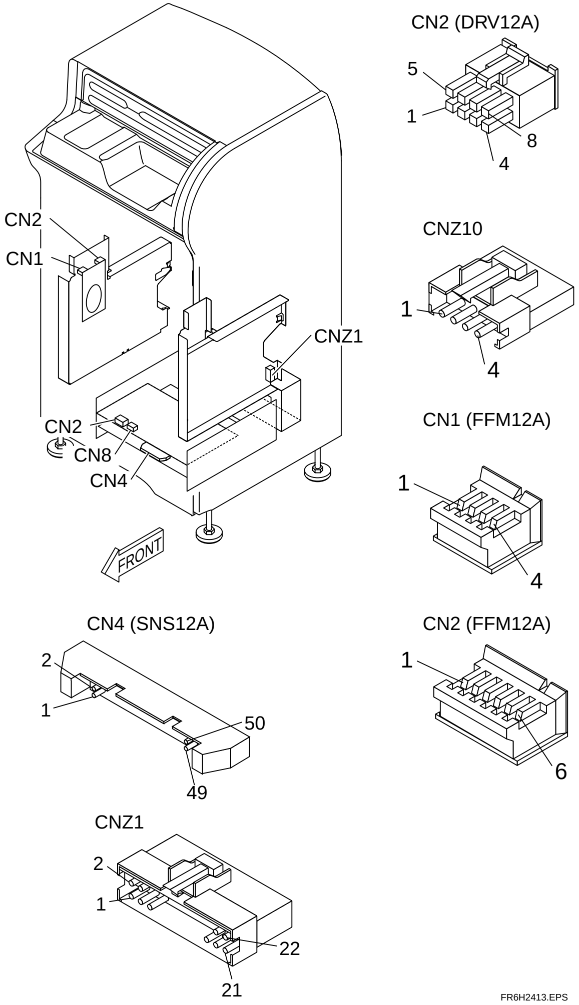
Check the following between the portions <A and B> in the block diagram.

1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [5] Block Diagram

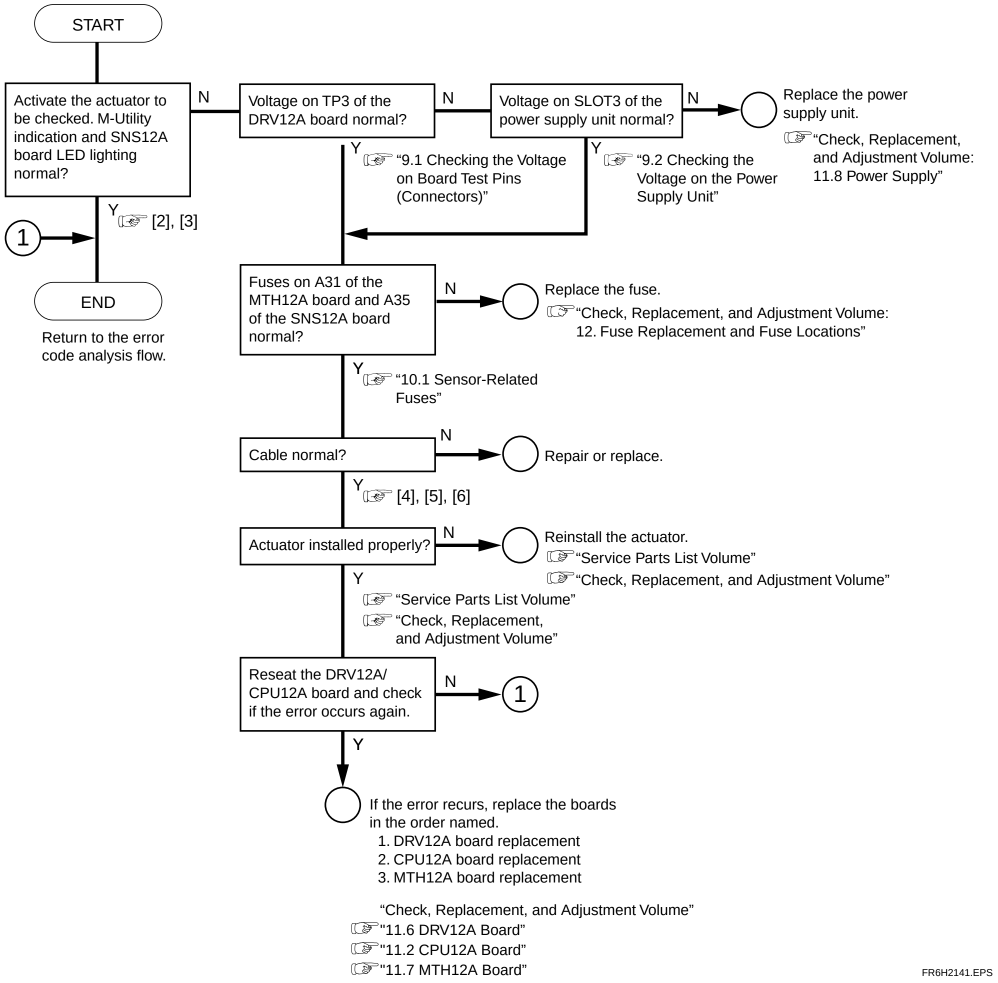

Power supply unit
α 400
AC IN
85—265V
TB1
1
2
3
L
+15V
1
2
PGND
+15V
PGND
MTH12A
CPU12A
SNS12A
CN4
1
40 SUP OK
41 OK L
42 +5VSEN
43 START L
44 CW L
45 MO L
50
DRV12A
CN2
1
2
3
4
5
6
7
8
L11
CN8
1 PGND
2 +5V
3 PGND
4 +15V
A
B
CNZ1
1
13 SUP OK
14 OK L
15 +5VSEN
16 START L
17 CW L
18 MO L
22
CNZ10
1 YEL +15V
2 YEL PGND
3 YEL +5V
4 YEL PGND
FFM12A
CN2
1
2
3
4
5
6
CN1
1
2
3
4
■ 15V → 5V regulator
FR6H2033.EPS

## [6] Connector Pin Numbers


CN2
CN1
CNZ1
CN2
CN8
CN4
FRONT
CN2 (DRV12A)
5
1
8
4
CNZ10
1
4
CN1 (FFM12A)
1
4
CN4 (SNS12A)
2
1
50
49
CN2 (FFM12A)
1
6
CNZ1
2
1
22
21
FR6H2413.EPS

# 13. Checking the Actuators

## [1] Analysis Flow


START
Activate the actuator to be checked. M-Utility indication and SNS12A board LED lighting normal?
N
Y
☞ [2], [3]
1
END
Return to the error code analysis flow.
Voltage on TP3 of the DRV12A board normal?
N
Y
☞ "9.1 Checking the Voltage on Board Test Pins (Connectors)"
Voltage on SLOT3 of the power supply unit normal?
N
Y
☞ "9.2 Checking the Voltage on the Power Supply Unit"
Replace the power supply unit.
☞ "Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Fuses on A31 of the MTH12A board and A35 of the SNS12A board normal?
N
Replace the fuse.
☞ "Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"
Y
☞ "10.1 Sensor-Related Fuses"
Cable normal?
N
Repair or replace.
Y
☞ [4], [5], [6]
Actuator installed properly?
N
Reinstall the actuator.
☞ "Service Parts List Volume"
☞ "Check, Replacement, and Adjustment Volume"
Y
☞ "Service Parts List Volume"
☞ "Check, Replacement, and Adjustment Volume"
Reseat the DRV12A/ CPU12A board and check if the error occurs again.
N
1
Y
If the error recurs, replace the boards in the order named.
1. DRV12A board replacement
2. CPU12A board replacement
3. MTH12A board replacement
"Check, Replacement, and Adjustment Volume"
☞ "11.6 DRV12A Board"
☞ "11.2 CPU12A Board"
☞ "11.7 MTH12A Board"

FR6H2141.EPS

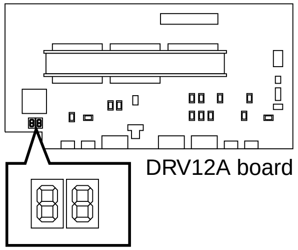
## [2] Checking the Light-Collecting Unit in M-Utility

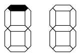
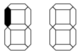
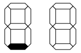
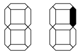
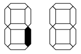
**◆ *CHECK* ◆**

*Make sure that the operation in M-Utility is consistent with the LED indication.*

[6] [ENT] → [2] [ENT] → [1] [ENT]

## [3] LED Lighting


DRV12A board

| Location | I/O No. | Monitoring description | LED ON | OFF |
|---|---|---|---|---|
|  | SolA1 | Monitors the cassette hold solenoid control signal. | Drive | Stop |
|  | PA1 | Monitors the suction pump drive signal. | Drive | Stop |
|  | SVA1 | Monitors the IP leak valve drive signal. | Drive | Stop |
|  | CLA1 | Monitors the clutch drive signal. | Drive | Stop |
|  | SolZ1 | Monitors the stopper driving solenoid control signal. | Drive | Stop |

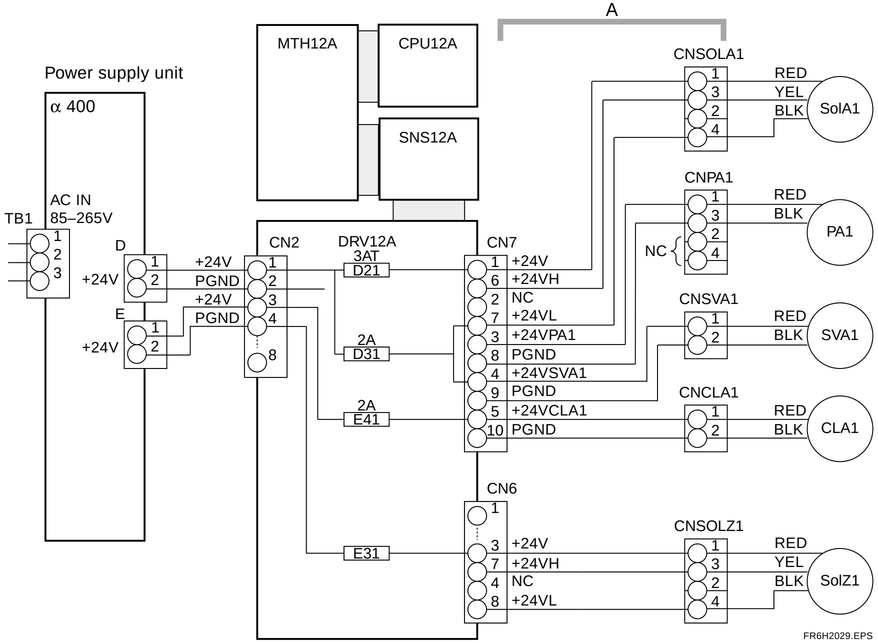
TR6H2007.EPS

## [4] Checking the Cable

Check the following between the portions <A and B> in the block diagram.

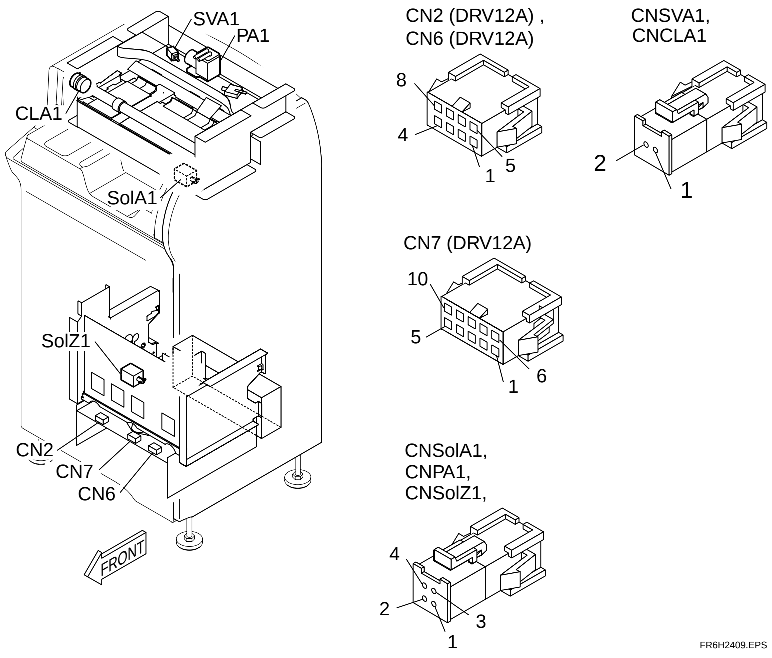
1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [5] Block Diagram


A
Power supply unit
α 400
AC IN
85–265V
TB1
1
2
3
D
+24V
E
+24V
+24V
PGND
+24V
PGND
MTH12A
CPU12A
SNS12A
CN2
DRV12A
3AT
D21
2A
D31
2A
E41
E31
CN7
1 +24V
6 +24VH
2 NC
7 +24VL
3 +24VPA1
8 PGND
4 +24VSVA1
9 PGND
5 +24VCLA1
10 PGND
CN6
1
3 +24V
7 +24VH
4 NC
8 +24VL
CNSOLA1
CNPA1
NC
CNSVA1
CNCLA1
CNSOLZ1
RED
YEL
BLK
SolA1
PA1
SVA1
CLA1
SolZ1

FR6H2029.EPS

## [6] Connector Pin Numbers

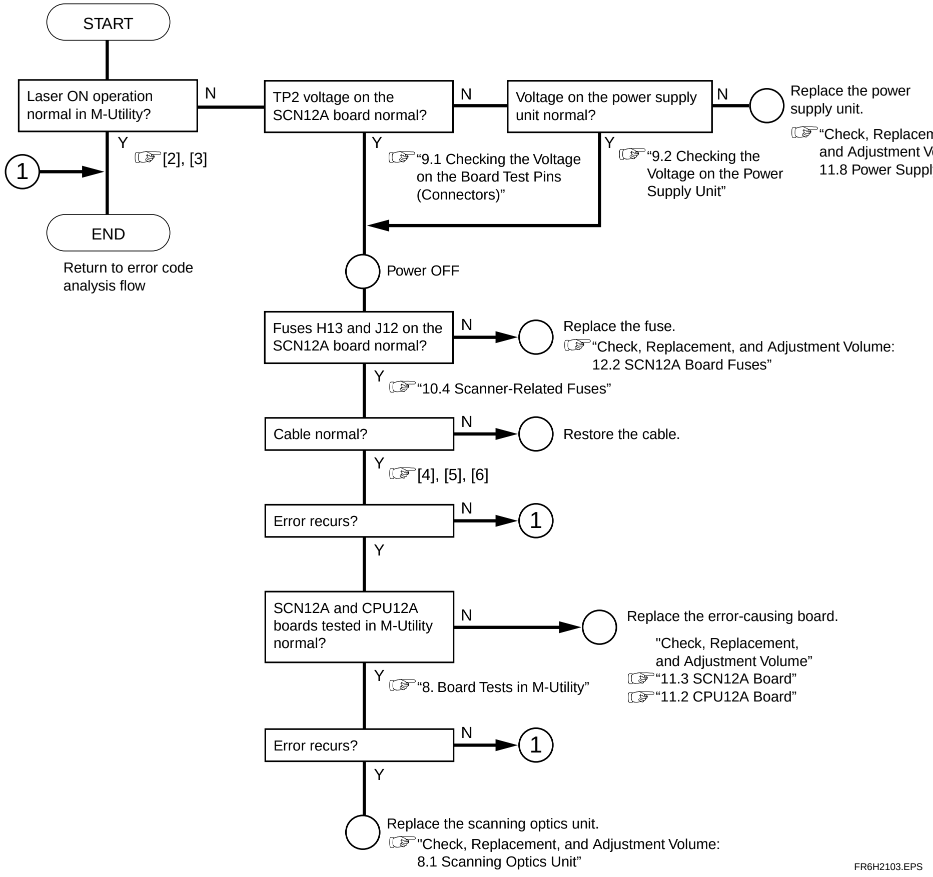

SVA1
PA1
CLA1
SolA1
SolZ1
CN2
CN7
CN6
FRONT
CN2 (DRV12A) ,
CN6 (DRV12A)
8
4
1
5
CNSVA1,
CNCLA1
2
1
CN7 (DRV12A)
10
5
1
6
CNSolA1,
CNPA1,
CNSolZ1,
4
2
1
3

FR6H2409.EPS

# 14. Checking the Scanner I/O

## 14.1 Checking the Laser (LDD)

### [1] Analysis Flow


START
Laser ON operation normal in M-Utility?
N
TP2 voltage on the SCN12A board normal?
N
Voltage on the power supply unit normal?
N
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Y
☞[2], [3]
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
1
END
Return to error code analysis flow
Power OFF
Fuses H13 and J12 on the SCN12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Cable normal?
N
Restore the cable.
Y
☞[4], [5], [6]
Error recurs?
N
1
Y
SCN12A and CPU12A boards tested in M-Utility normal?
N
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"

FR6H2103.EPS

### [2] Checking Laser ON in M-Utility

**◆ *CHECK* ◆**

*Check the diagnostics and LED indications in M-Utility.*

[5] [ENT] → [3] [ENT] → [2] [ENT]

| | |
|---|---|
| • RESULT: OK | → Normal |
| • RESULT: XXXXX | → Error |

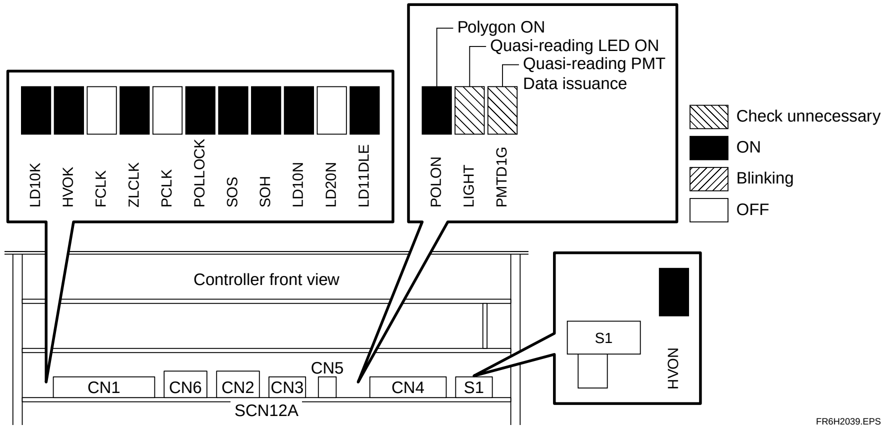
### [3] LED Indications

[GOOD indication]

**◆ *NOTE* ◆**

*Because the "HVOK" LED indication varies depending on the position of the HV switch, check the position of the HV switch.*

| | |
|---|---|
| *• High-voltage switch in the ON position* | *→ LED ON* |
| *• High-voltage switch in the OFF position* | *→ LED OFF* |

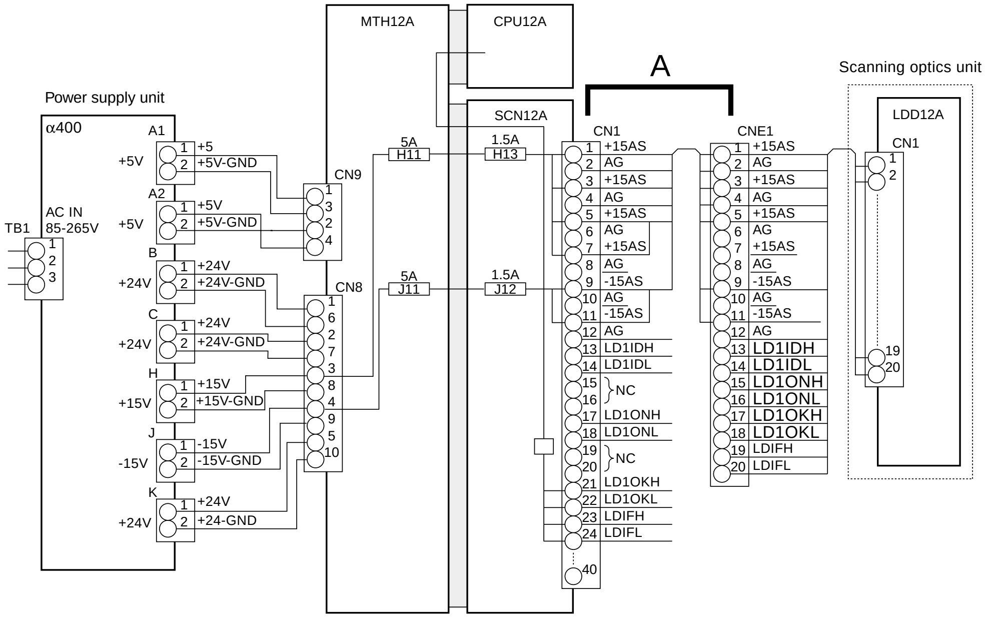

Polygon ON
Quasi-reading LED ON
Quasi-reading PMT Data issuance
LD10K
HVOK
FCLK
ZLCLK
PCLK
POLLOCK
SOS
SOH
LD10N
LD20N
LD11DLE
POLON
LIGHT
PMTD1G
▨ Check unnecessary
■ ON
▧ Blinking
□ OFF
Controller front view
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
S1
HVON

FR6H2039.EPS

[NG indication]

All other than GOOD indication.

## [4] Block Diagram


MTH12A
CPU12A
A
Scanning optics unit
Power supply unit
α400
SCN12A
LDD12A
TB1
AC IN
85-265V
1
2
3
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
B
+24V
1 +24V
2 +24V-GND
C
+24V
1 +24V
2 +24V-GND
H
+15V
1 +15V
2 +15V-GND
J
-15V
1 -15V
2 -15V-GND
K
+24V
1 +24V
2 +24-GND
CN9
1
3
2
4
CN8
1
6
2
7
3
8
4
9
5
10
5A
H11
5A
J11
1.5A
H13
1.5A
J12
CN1
1 +15AS
2 AG
3 +15AS
4 AG
5 +15AS
6 AG
7 +15AS
8 AG
9 -15AS
10 AG
11 -15AS
12 AG
13 LD1IDH
14 LD1IDL
15
16
NC
17 LD1ONH
18 LD1ONL
19
20
NC
21 LD1OKH
22 LD1OKL
23 LDIFH
24 LDIFL
40
CNE1
1 +15AS
2 AG
3 +15AS
4 AG
5 +15AS
6 AG
7 +15AS
8 AG
9 -15AS
10 AG
11 -15AS
12 AG
13 LD1IDH
14 LD1IDL
15 LD1ONH
16 LD1ONL
17 LD1OKH
18 LD1OKL
19 LDIFH
20 LDIFL
CN1
1
2
19
20

Error detection signal: LD1IDH, LD1IDL, LD1ONH, LD1ONL, LD1OKH, LD1OKL

FR6H2023.EPS

## [5] Checking the Cable

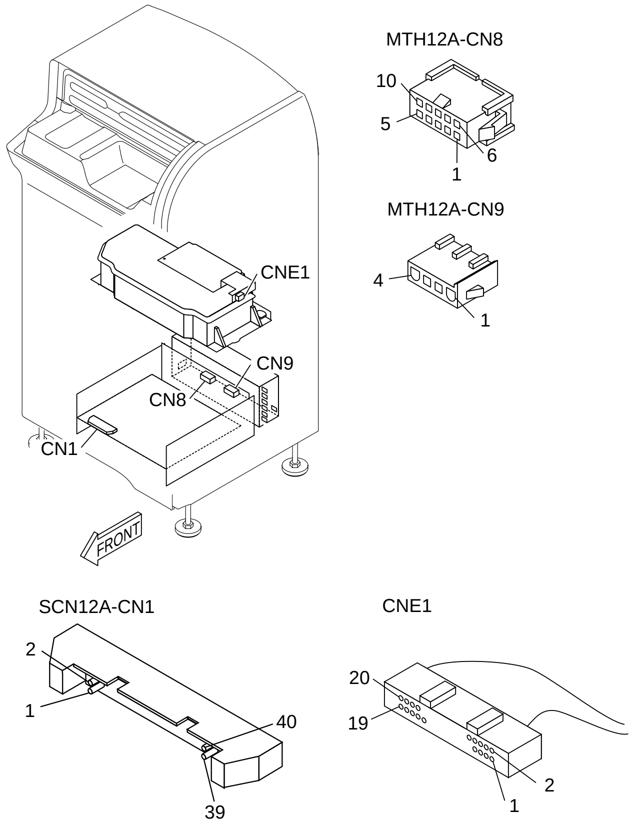
**◆ NOTE ◆**

*Make sure that the power is OFF.*

Check the following between portions <A> in the block diagram.

1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

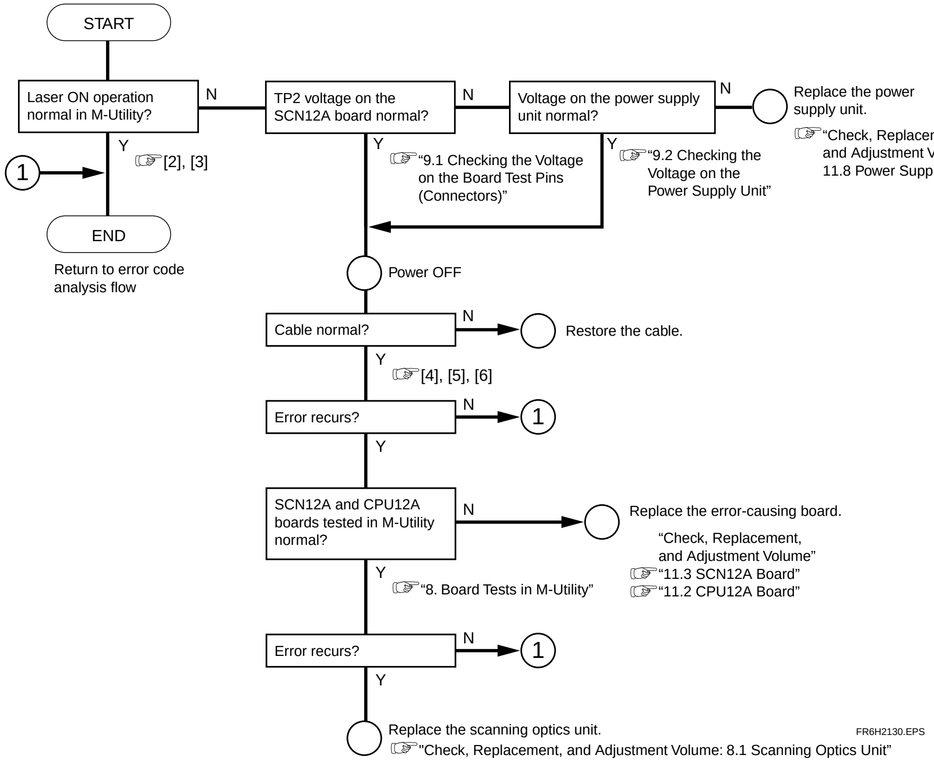
## [6] Connector Pin Numbers


MTH12A-CN8
10
5
1
6
MTH12A-CN9
4
1
CNE1
CN9
CN8
CN1
FRONT
SCN12A-CN1
2
1
40
39
CNE1
20
19
2
1

FR6H2403.EPS

## 14.2 Checking the Polygonal Mirror (POL)

### [1] Analysis Flow


START
Laser ON operation normal in M-Utility?
N
Y
☞[2], [3]
1
END
Return to error code analysis flow
TP2 voltage on the SCN12A board normal?
N
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Voltage on the power supply unit normal?
N
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Power OFF
Cable normal?
N
Restore the cable.
Y
☞[4], [5], [6]
Error recurs?
N
1
Y
SCN12A and CPU12A boards tested in M-Utility normal?
N
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
FR6H2130.EPS

### [2] Checking Laser ON in M-Utility

**◆ *CHECK* ◆**

*Check the diagnostics and LED indications in M-Utility.*

[5] [ENT] → [3] [ENT] → [2] [ENT]

| | |
|---|---|
| • RESULT: OK | → Normal |
| • RESULT: XXXXX | → Error |

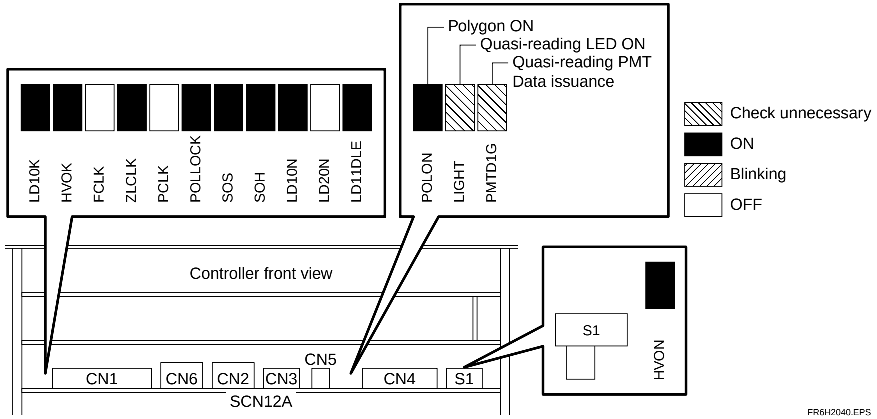
### [3] LED Indications

[GOOD indication]

**◆ *NOTE* ◆**

*Because the "HVOK" LED indication varies depending on the position of the HV switch, check the position of the HV switch.*

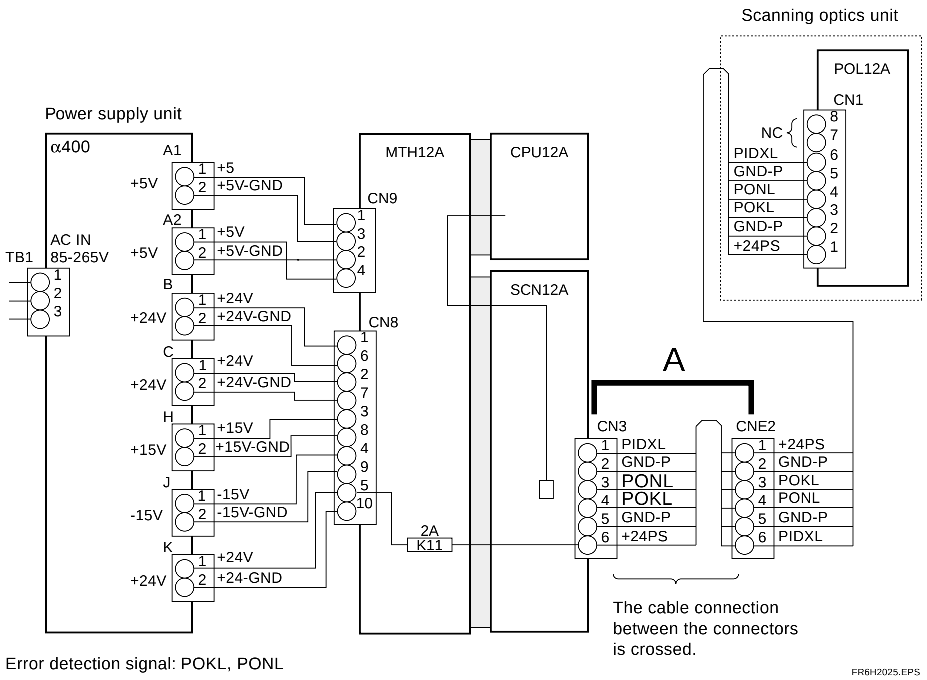
| | |
|---|---|
| *• High-voltage switch in the ON position* | *→ LED ON* |
| *• High-voltage switch in the OFF position* | *→ LED OFF* |


Polygon ON
Quasi-reading LED ON
Quasi-reading PMT Data issuance
LD10K
HVOK
FCLK
ZLCLK
PCLK
POLLOCK
SOS
SOH
LD10N
LD20N
LD11DLE
POLON
LIGHT
PMTD1G
▨ Check unnecessary
■ ON
▨ Blinking
□ OFF
Controller front view
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
S1
HVON
FR6H2040.EPS

[NG indication]

All other than GOOD indication.

## [4] Block Diagram


Scanning optics unit
POL12A
CN1
NC
PIDXL
GND-P
PONL
POKL
GND-P
+24PS
8
7
6
5
4
3
2
1
Power supply unit
α400
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
TB1
AC IN
85-265V
1
2
3
B
+24V
1 +24V
2 +24V-GND
C
+24V
1 +24V
2 +24V-GND
H
+15V
1 +15V
2 +15V-GND
J
-15V
1 -15V
2 -15V-GND
K
+24V
1 +24V
2 +24-GND
MTH12A
CN9
1
3
2
4
CN8
1
6
2
7
3
8
4
9
5
10
2A
K11
CPU12A
SCN12A
A
CN3
1 PIDXL
2 GND-P
3 PONL
4 POKL
5 GND-P
6 +24PS
CNE2
1 +24PS
2 GND-P
3 POKL
4 PONL
5 GND-P
6 PIDXL
The cable connection between the connectors is crossed.
FR6H2025.EPS

Error detection signal: POKL, PONL

## [5] Checking the Cable

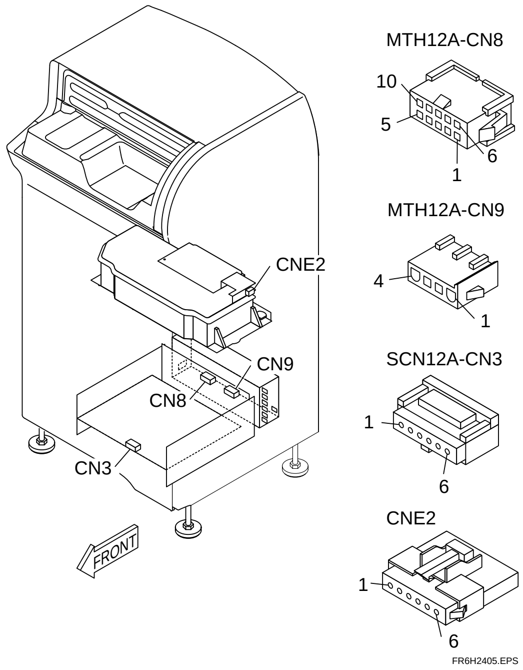
◆ ***NOTE*** ◆

*Make sure that the power is OFF.*

Check the following between portions <A> in the block diagram.

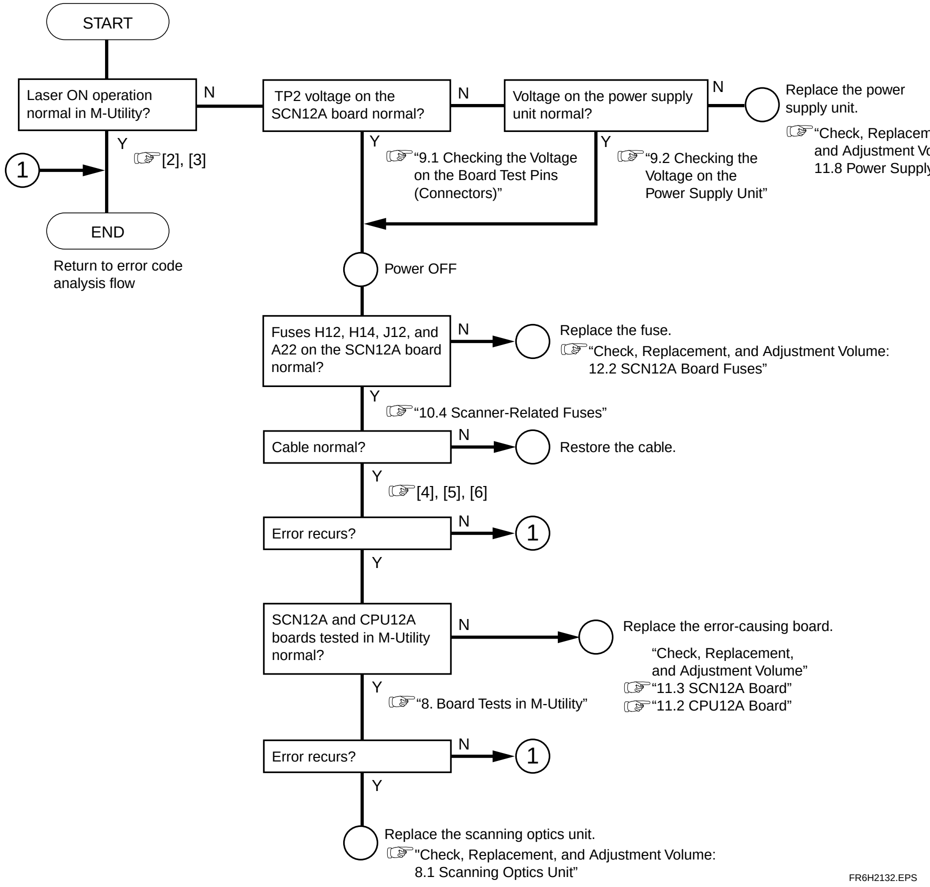
1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [6] Connector Pin Numbers


CNE2
CN9
CN8
CN3
FRONT
MTH12A-CN8
10
5
6
1
MTH12A-CN9
4
1
SCN12A-CN3
1
6
CNE2
1
6
FR6H2405.EPS

## 14.3 Checking the Start-Point Sensor (SYN)

### [1] Analysis Flow


START
Laser ON operation normal in M-Utility?
N
Y
☞[2], [3]
1
END
Return to error code analysis flow
TP2 voltage on the SCN12A board normal?
N
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Voltage on the power supply unit normal?
N
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Power OFF
Fuses H12, H14, J12, and A22 on the SCN12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Cable normal?
N
Restore the cable.
Y
☞[4], [5], [6]
Error recurs?
N
1
Y
SCN12A and CPU12A boards tested in M-Utility normal?
N
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
FR6H2132.EPS

### [2] Checking Laser ON in M-Utility

**◆ *CHECK* ◆**

*Check the diagnostics and LED indications in M-Utility.*

[5] [ENT] → [3] [ENT] → [2] [ENT]

- RESULT: OK → Normal
- RESULT: XXXXX → Error

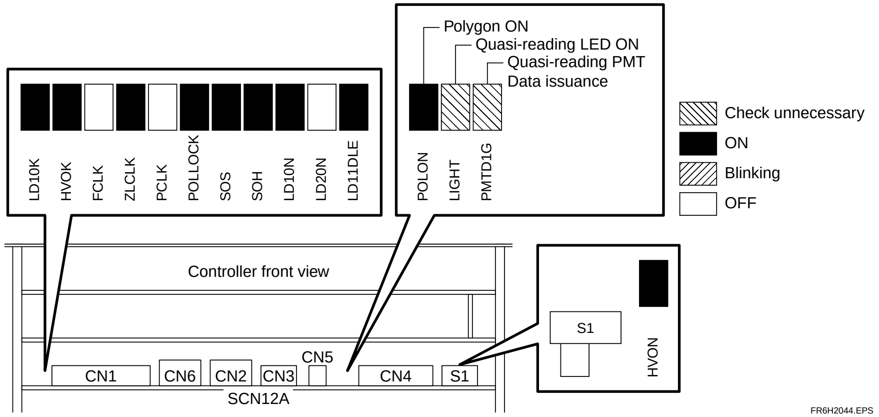
### [3] LED Indications

[GOOD indication]

**◆ *NOTE* ◆**

*Because the "HVOK" LED indication varies depending on the position of the HV switch, check the position of the HV switch.*

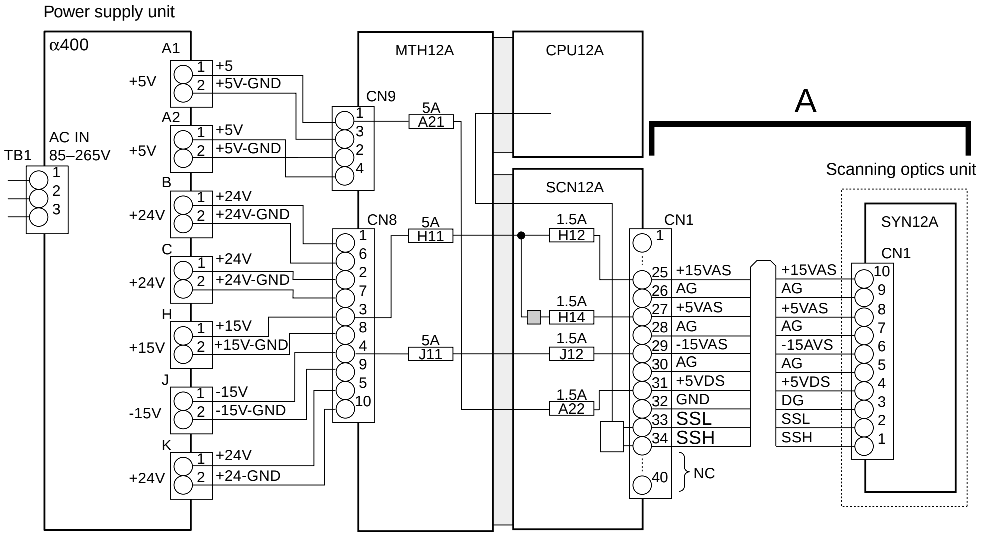
- *High-voltage switch in the ON position → LED ON*
- *High-voltage switch in the OFF position → LED OFF*


LD10K
HVOK
FCLK
ZLCLK
PCLK
POLLOCK
SOS
SOH
LD10N
LD20N
LD11DLE
Polygon ON
Quasi-reading LED ON
Quasi-reading PMT Data issuance
POLON
LIGHT
PMTD1G
▧ Check unnecessary
■ ON
▨ Blinking
□ OFF
Controller front view
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
S1
HVON
FR6H2044.EPS

[NG indication]

All other than GOOD indication.

## [4] Block Diagram


Power supply unit
α400
AC IN
85–265V
TB1
1
2
3
A1
+5V
+5
+5V-GND
A2
+5V
+5V
+5V-GND
B
+24V
+24V
+24V-GND
C
+24V
+24V
+24V-GND
H
+15V
+15V
+15V-GND
J
-15V
-15V
-15V-GND
K
+24V
+24V
+24-GND
MTH12A
CN9
CN8
5A
A21
5A
H11
5A
J11
CPU12A
SCN12A
1.5A
H12
1.5A
H14
1.5A
J12
1.5A
A22
CN1
25 +15VAS
26 AG
27 +5VAS
28 AG
29 -15VAS
30 AG
31 +5VDS
32 GND
33 SSL
34 SSH
40
NC
A
Scanning optics unit
SYN12A
CN1
+15VAS 10
AG 9
+5VAS 8
AG 7
-15AVS 6
AG 5
+5VDS 4
DG 3
SSL 2
SSH 1

Error detection signal: SSL, SSH

▨ : 15V → 5 V regulator

FR6H2021.EPS

## [5] Checking the Cable

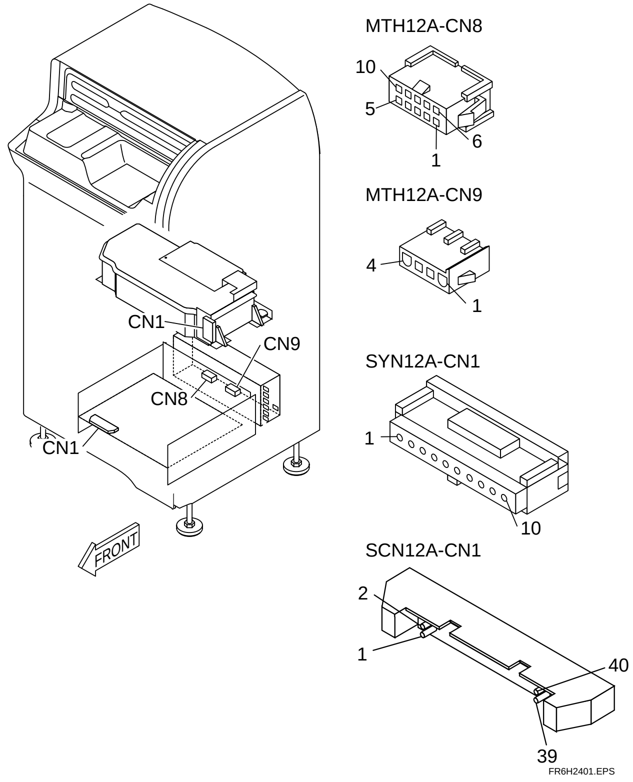
**◆ *NOTE* ◆**

*Make sure that the power is OFF.*

Check the following between portions <A> in the block diagram.

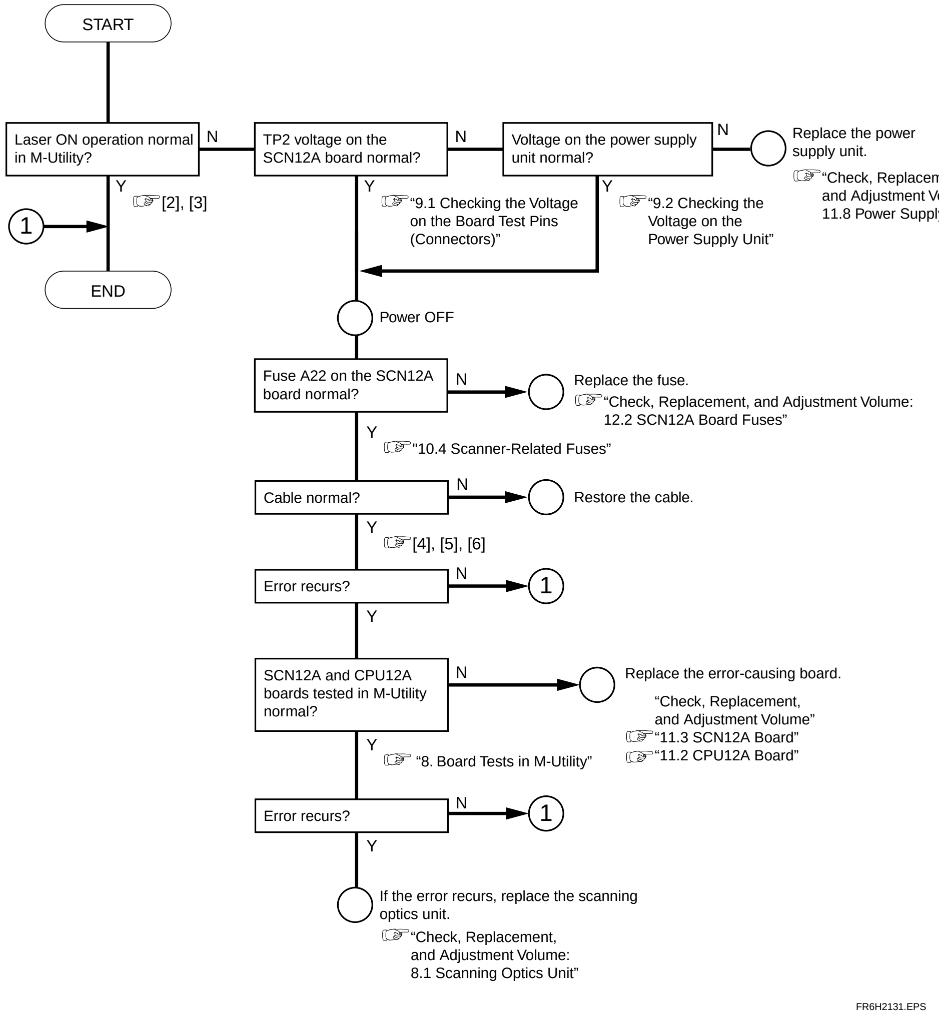
1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

## [6] Connector Pin Numbers


CN1
CN9
CN8
CN1
FRONT
MTH12A-CN8
10
5
6
1
MTH12A-CN9
4
1
SYN12A-CN1
1
10
SCN12A-CN1
2
1
40
39
FR6H2401.EPS

## 14.4 Checking the Leading-Edge Sensor (SED)

### [1] Analysis Flow


START
Laser ON operation normal in M-Utility?
N
Y
☞[2], [3]
1
END
TP2 voltage on the SCN12A board normal?
N
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Voltage on the power supply unit normal?
N
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Power OFF
Fuse A22 on the SCN12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Cable normal?
N
Restore the cable.
Y
☞[4], [5], [6]
Error recurs?
N
1
Y
SCN12A and CPU12A boards tested in M-Utility normal?
N
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
Y
☞ "8. Board Tests in M-Utility"
Error recurs?
N
1
Y
If the error recurs, replace the scanning optics unit.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"
FR6H2131.EPS

### [2] Checking Laser ON in M-Utility

**◆ *CHECK* ◆**

*Check the diagnostics and LED indications in M-Utility.*

[5] [ENT] → [3] [ENT] → [2] [ENT]

- RESULT: OK → Normal
- RESULT: XXXXX → Error

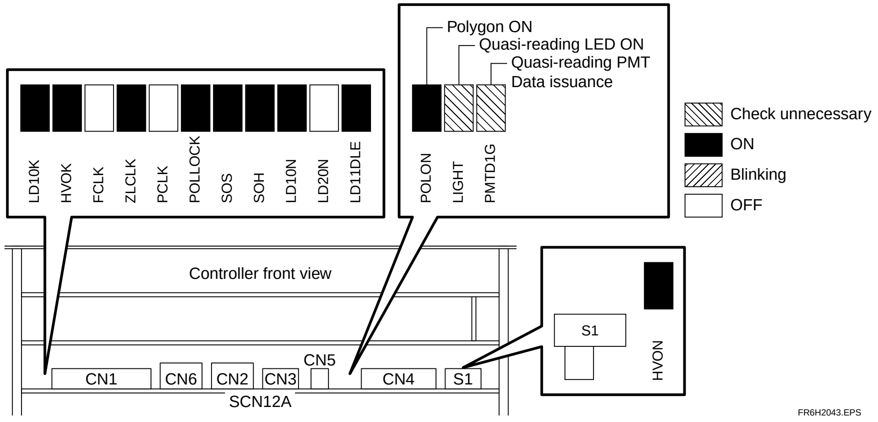
### [3] LED Indications

[GOOD indication]

**◆ *NOTE* ◆**

*Because the "HVOK" LED indication varies depending on the position of the HV switch, check the position of the HV switch.*

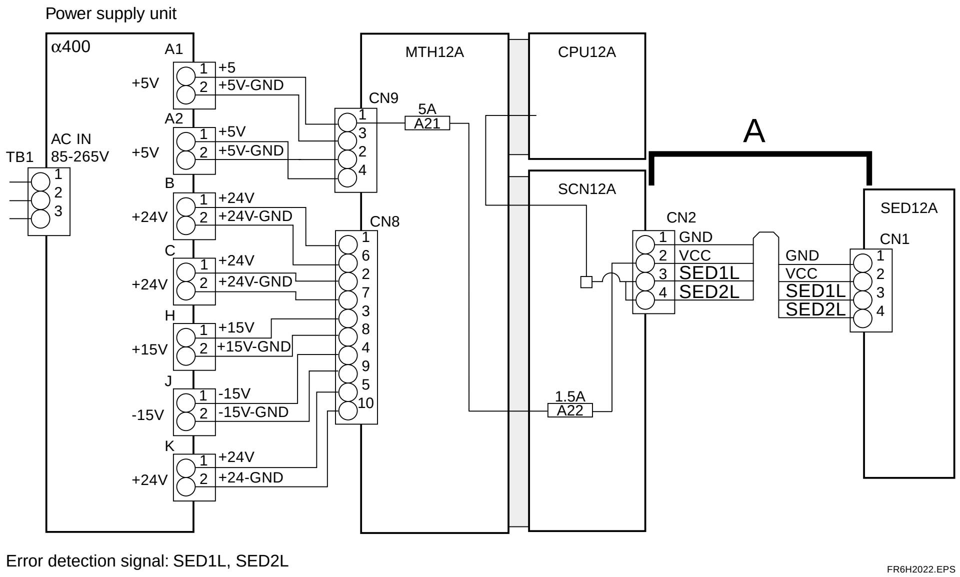
- *High-voltage switch in the ON position → LED ON*
- *High-voltage switch in the OFF position → LED OFF*


LD10K
HVOK
FCLK
ZLCLK
PCLK
POLLOCK
SOS
SOH
LD10N
LD20N
LD11DLE
Polygon ON
Quasi-reading LED ON
Quasi-reading PMT Data issuance
POLON
LIGHT
PMTD1G
Check unnecessary
ON
Blinking
OFF
Controller front view
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
S1
HVON
FR6H2043.EPS

[NG indication]

All other than GOOD indication.

## [4] Block Diagram


Power supply unit
α400
A1
+5V
1 +5
2 +5V-GND
A2
+5V
1 +5V
2 +5V-GND
TB1
AC IN
85-265V
1
2
3
B
+24V
1 +24V
2 +24V-GND
C
+24V
1 +24V
2 +24V-GND
H
+15V
1 +15V
2 +15V-GND
J
-15V
1 -15V
2 -15V-GND
K
+24V
1 +24V
2 +24-GND
MTH12A
CN9
1 3 2 4
5A
A21
CN8
1 6 2 7 3 8 4 9 5 10
CPU12A
SCN12A
1.5A
A22
A
CN2
1 GND
2 VCC
3 SED1L
4 SED2L
SED12A
CN1
GND 1
VCC 2
SED1L 3
SED2L 4

Error detection signal: SED1L, SED2L

FR6H2022.EPS

## [5] Checking the Cable

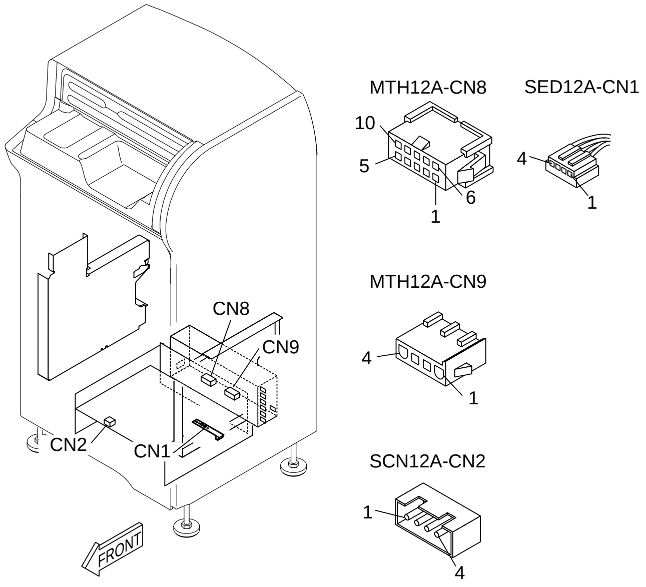
**◆ *NOTE* ◆**

*Make sure that the power is OFF.*

Check the following between portions <A> in the block diagram.

1. The connector should be securely connected.
2. Check for shorts between each of the pins and GND → 2Ω or greater.
3. Check for shorts between each of the pins → 2Ω or greater.
4. Check for continuity of each of the pins → 1Ω or less.

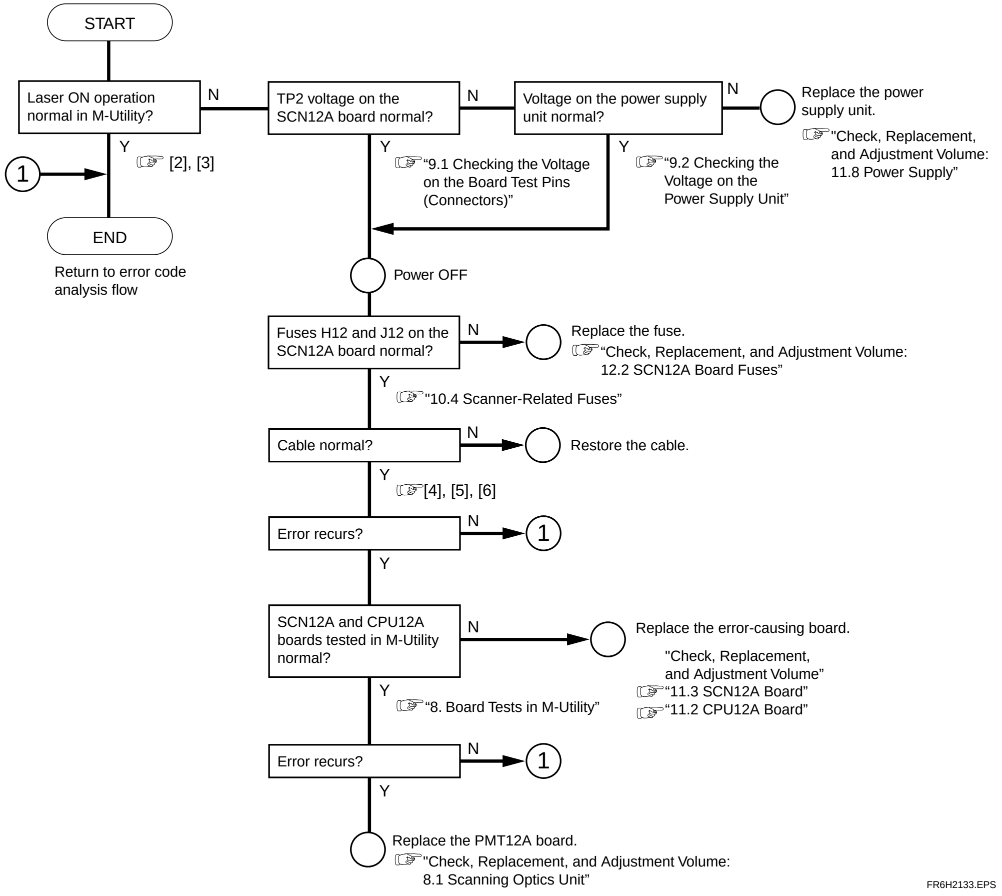
## [6] Connector Pin Numbers


MTH12A-CN8
10
5
1
6
SED12A-CN1
4
1
MTH12A-CN9
4
1
SCN12A-CN2
1
4
CN8
CN9
CN2
CN1
FRONT

FR6H2402.EPS

## 14.5 Checking the Light-Collecting Unit (PMT)

### [1] Analysis Flow


START
Laser ON operation normal in M-Utility?
N
Y
☞ [2], [3]
1
END
Return to error code analysis flow
TP2 voltage on the SCN12A board normal?
N
Y
☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"
Voltage on the power supply unit normal?
N
Y
☞"9.2 Checking the Voltage on the Power Supply Unit"
Replace the power supply unit.
☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"
Power OFF
Fuses H12 and J12 on the SCN12A board normal?
N
Replace the fuse.
☞"Check, Replacement, and Adjustment Volume: 12.2 SCN12A Board Fuses"
Y
☞"10.4 Scanner-Related Fuses"
Cable normal?
N
Restore the cable.
Y
☞[4], [5], [6]
Error recurs?
N
1
Y
SCN12A and CPU12A boards tested in M-Utility normal?
N
Replace the error-causing board.
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.2 CPU12A Board"
Y
☞"8. Board Tests in M-Utility"
Error recurs?
N
1
Y
Replace the PMT12A board.
☞"Check, Replacement, and Adjustment Volume: 8.1 Scanning Optics Unit"

FR6H2133.EPS

### [2] Checking the Light-Collecting Unit in M-Utility

**◆ *CHECK* ◆**

*Check the diagnostics and LED indications in M-Utility.*

[5] [ENT] → [3] [ENT] → [2] [ENT]

- RESULT: OK → Normal
- RESULT: XXXXX → Error

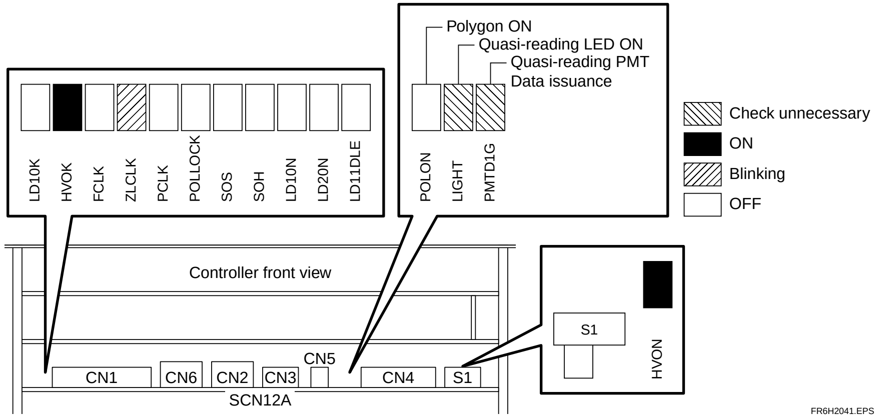
### [3] LED Indications

[GOOD indication]

**◆ *NOTE* ◆**

*Because the "HVOK" LED indication varies depending on the position of the HV switch, check the position of the HV switch.*

- *High-voltage switch in the ON position → LED ON*
- *High-voltage switch in the OFF position → LED OFF*

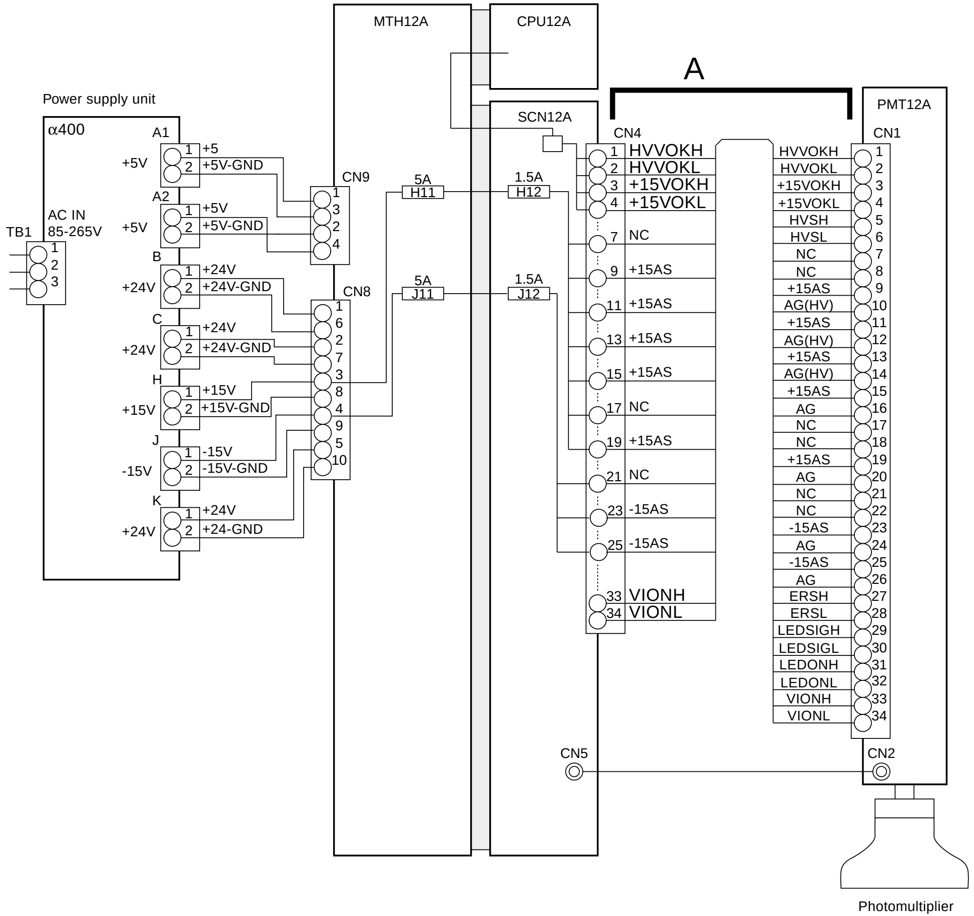

LD10K
HVOK
FCLK
ZLCLK
PCLK
POLLOCK
SOS
SOH
LD10N
LD20N
LD11DLE
Polygon ON
Quasi-reading LED ON
Quasi-reading PMT Data issuance
POLON
LIGHT
PMTD1G
▨ Check unnecessary
■ ON
▨ Blinking
□ OFF
Controller front view
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
S1
HVON

FR6H2041.EPS

[NG indication]

All other than GOOD indication.

## [4] Block Diagram


MTH12A
CPU12A
SCN12A
PMT12A
A
Power supply unit
α400
A1
+5V
+5
+5V-GND
A2
+5V
+5V-GND
TB1
AC IN
85-265V
B
+24V
+24V-GND
C
+24V
+24V-GND
H
+15V
+15V-GND
J
-15V
-15V-GND
K
+24V
+24-GND
CN9
CN8
5A
H11
5A
J11
1.5A
H12
1.5A
J12
CN4
1 HVVOKH
2 HVVOKL
3 +15VOKH
4 +15VOKL
7 NC
9 +15AS
11 +15AS
13 +15AS
15 +15AS
17 NC
19 +15AS
21 NC
23 -15AS
25 -15AS
33 VIONH
34 VIONL
CN1
HVVOKH 1
HVVOKL 2
+15VOKH 3
+15VOKL 4
HVSH 5
HVSL 6
NC 7
NC 8
+15AS 9
AG(HV) 10
+15AS 11
AG(HV) 12
+15AS 13
AG(HV) 14
+15AS 15
AG 16
NC 17
NC 18
+15AS 19
AG 20
NC 21
NC 22
-15AS 23
AG 24
-15AS 25
AG 26
ERSH 27
ERSL 28
LEDSIGH 29
LEDSIGL 30
LEDONH 31
LEDONL 32
VIONH 33
VIONL 34
CN5
CN2
Photomultiplier

Error detection signal: HVOKH, HVOKL, +15VOKH, 15VOKL, VIONH, VIONL

FR6H2024.EPS

## [5] Checking the Cable

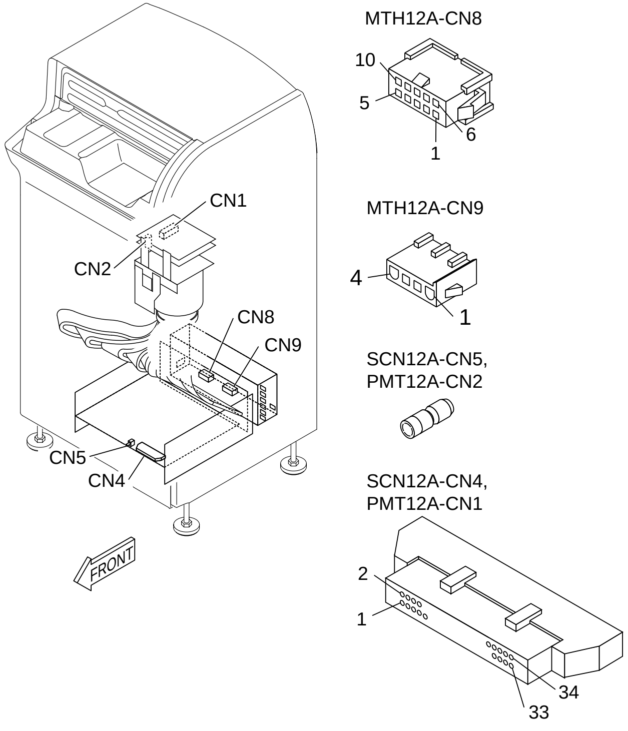
◆ ***NOTE*** ◆

*Make sure that the power is OFF.*

Check the following between portions <A> in the block diagram.

| | |
|---|---|
| 1. The connector should be securely connected. | |
| 2. Check for shorts between each of the pins and GND | → 2Ω or greater. |
| 3. Check for shorts between each of the pins | → 2Ω or greater. |
| 4. Check for continuity of each of the pins | → 1Ω or less. |

## [6] Connector Pin Numbers

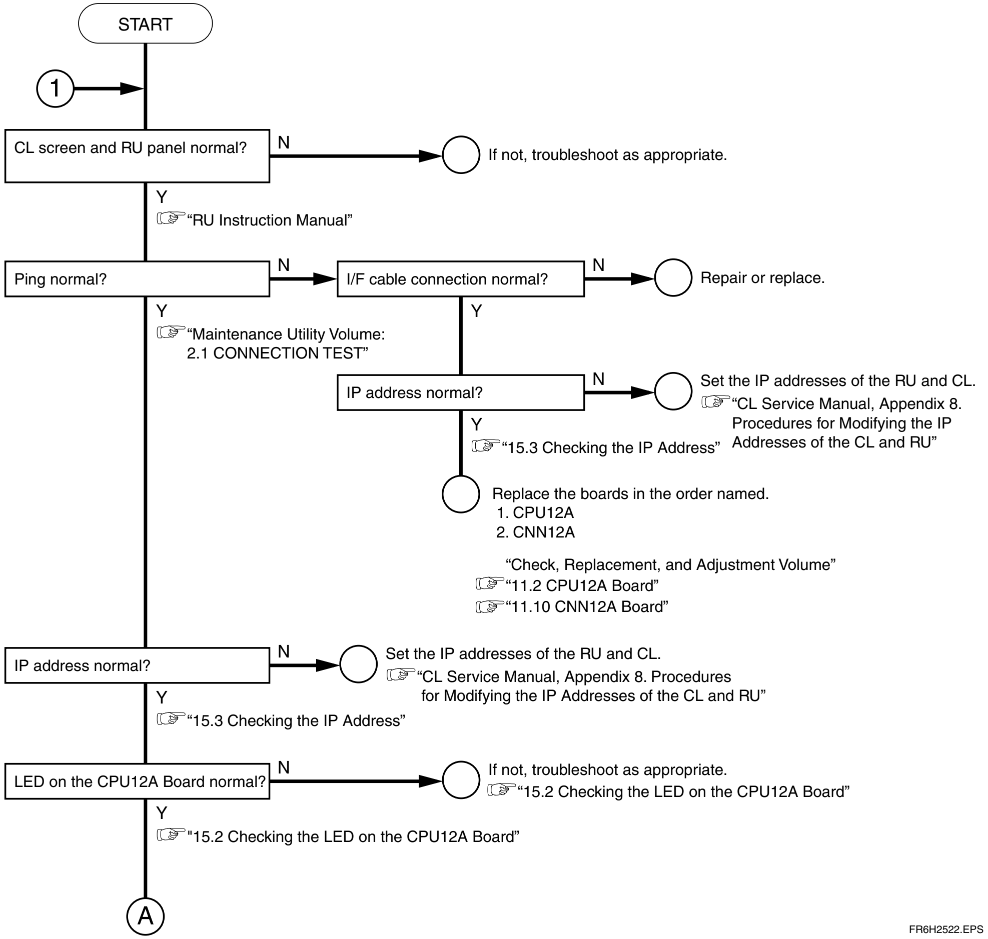

MTH12A-CN8
10
5
6
1
MTH12A-CN9
4
1
SCN12A-CN5,
PMT12A-CN2
SCN12A-CN4,
PMT12A-CN1
2
1
34
33
CN1
CN2
CN8
CN9
CN5
CN4
FRONT

FR6H2404.EPS

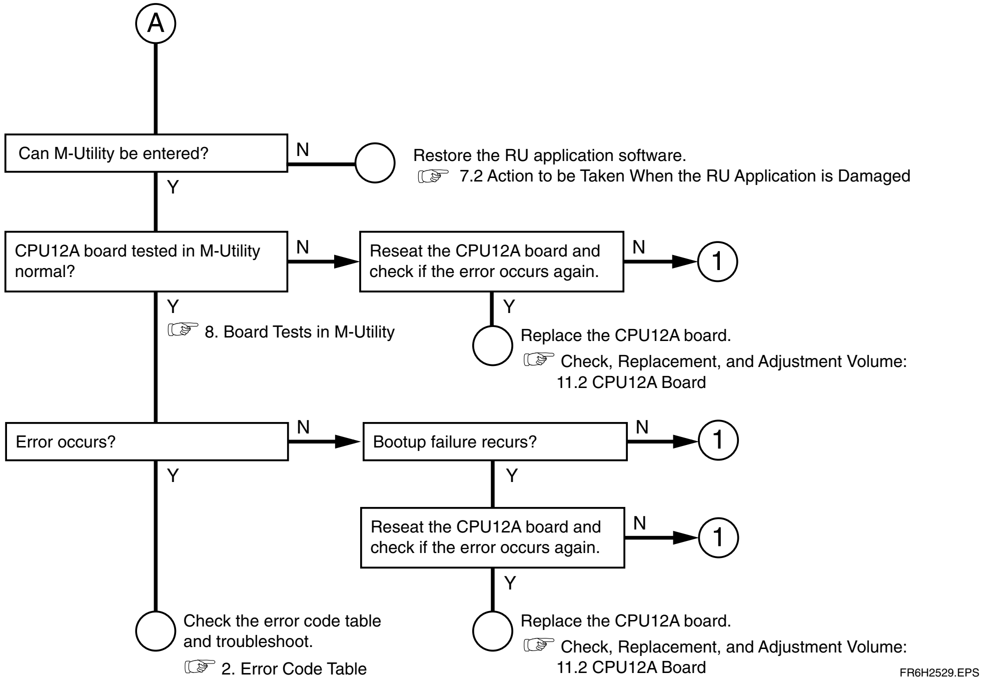
# 15. Bootup Failure Analysis Flow

## 15.1 RU Bootup Failure

### [1] Analysis Flow


START
1
CL screen and RU panel normal?
N
If not, troubleshoot as appropriate.
Y
☞"RU Instruction Manual"
Ping normal?
N
I/F cable connection normal?
N
Repair or replace.
Y
☞"Maintenance Utility Volume:
2.1 CONNECTION TEST"
Y
IP address normal?
N
Set the IP addresses of the RU and CL.
☞"CL Service Manual, Appendix 8.
Procedures for Modifying the IP
Addresses of the CL and RU"
Y
☞"15.3 Checking the IP Address"
Replace the boards in the order named.
1. CPU12A
2. CNN12A
"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.10 CNN12A Board"
IP address normal?
N
Set the IP addresses of the RU and CL.
☞"CL Service Manual, Appendix 8. Procedures
for Modifying the IP Addresses of the CL and RU"
Y
☞"15.3 Checking the IP Address"
LED on the CPU12A Board normal?
N
If not, troubleshoot as appropriate.
☞"15.2 Checking the LED on the CPU12A Board"
Y
☞"15.2 Checking the LED on the CPU12A Board"
A

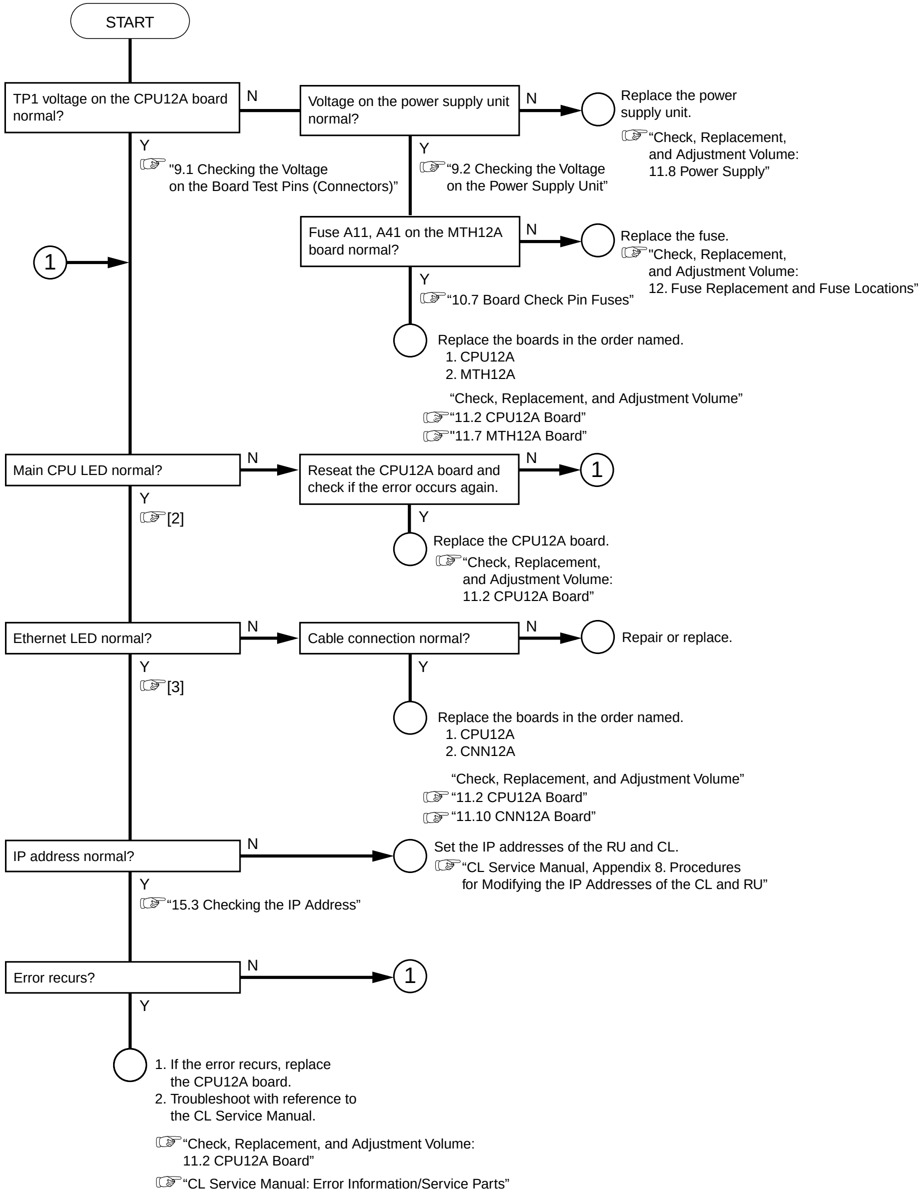
FR6H2522.EPS


A
Can M-Utility be entered?
N
Restore the RU application software.
☞ 7.2 Action to be Taken When the RU Application is Damaged
Y
CPU12A board tested in M-Utility normal?
N
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
Replace the CPU12A board.
☞ Check, Replacement, and Adjustment Volume:
11.2 CPU12A Board
Y
☞ 8. Board Tests in M-Utility
Error occurs?
N
Bootup failure recurs?
N
1
Y
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
Replace the CPU12A board.
☞ Check, Replacement, and Adjustment Volume:
11.2 CPU12A Board
Y
Check the error code table and troubleshoot.
☞ 2. Error Code Table

FR6H2529.EPS

## 15.2 Checking the LED on the CPU12A Board

### [1] Analysis Flow


START
N
Y
1
Y
N
Y
N
Y
N
Y
N
1
Y
N
1

TP1 voltage on the CPU12A board normal?

☞"9.1 Checking the Voltage on the Board Test Pins (Connectors)"

Voltage on the power supply unit normal?

☞"9.2 Checking the Voltage on the Power Supply Unit"

Replace the power supply unit.

☞"Check, Replacement, and Adjustment Volume: 11.8 Power Supply"

Fuse A11, A41 on the MTH12A board normal?

☞"10.7 Board Check Pin Fuses"

Replace the fuse.

☞"Check, Replacement, and Adjustment Volume: 12. Fuse Replacement and Fuse Locations"

Replace the boards in the order named.
1. CPU12A
2. MTH12A

"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.7 MTH12A Board"

Main CPU LED normal?

☞[2]

Reseat the CPU12A board and check if the error occurs again.

Replace the CPU12A board.

☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"

Ethernet LED normal?

☞[3]

Cable connection normal?

Repair or replace.

Replace the boards in the order named.
1. CPU12A
2. CNN12A

"Check, Replacement, and Adjustment Volume"
☞"11.2 CPU12A Board"
☞"11.10 CNN12A Board"

IP address normal?

☞"15.3 Checking the IP Address"

Set the IP addresses of the RU and CL.

☞"CL Service Manual, Appendix 8. Procedures for Modifying the IP Addresses of the CL and RU"

Error recurs?

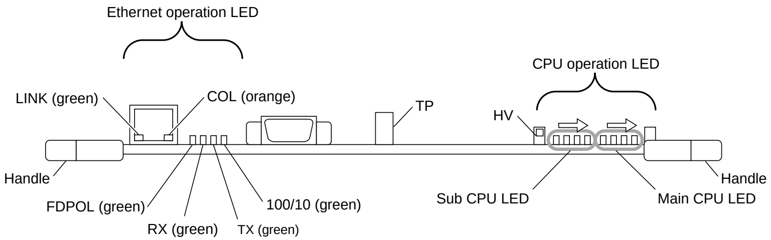
1. If the error recurs, replace the CPU12A board.
2. Troubleshoot with reference to the CL Service Manual.

☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"

☞"CL Service Manual: Error Information/Service Parts"

FR6H2523.EPS

### [2] LED Check

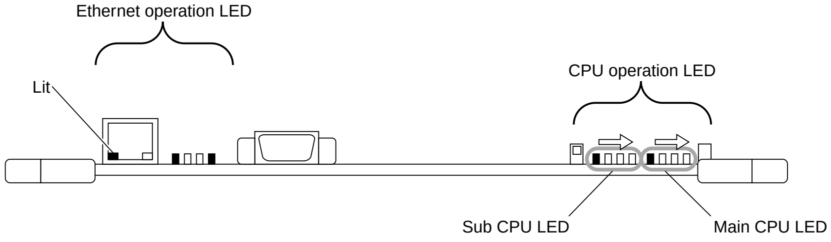

Ethernet operation LED
CPU operation LED
LINK (green)
COL (orange)
TP
HV
Handle
Handle
FDPOL (green)
RX (green)
TX (green)
100/10 (green)
Sub CPU LED
Main CPU LED

| Meanings of Ethernet operation LED illumination | | | | | | Meaning of CPU operation LED illumination | |
|---|---|---|---|---|---|---|---|
| LINK | COL | FDPOL | RX | TX | 100/10 | Main CPU LED | Sub CPU LED |
| Link established | Collision occurred | In operation | Packet receiving | Packet sending | Connected at 100Mbps | Indicate operating status | Indicate operating status |

FR6H2526.EPS

### [3] LED Indication

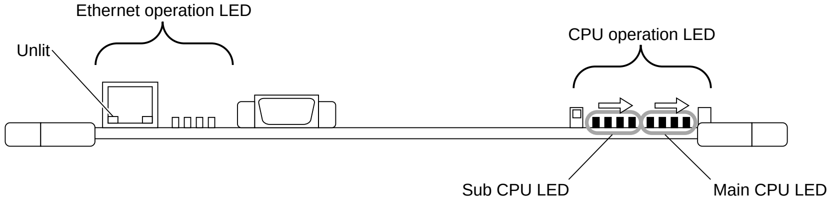
[GOOD indication]


Ethernet operation LED
CPU operation LED
Lit
Sub CPU LED
Main CPU LED

FR6H2524.EPS

[NG indication]

- When the network cable is not connected

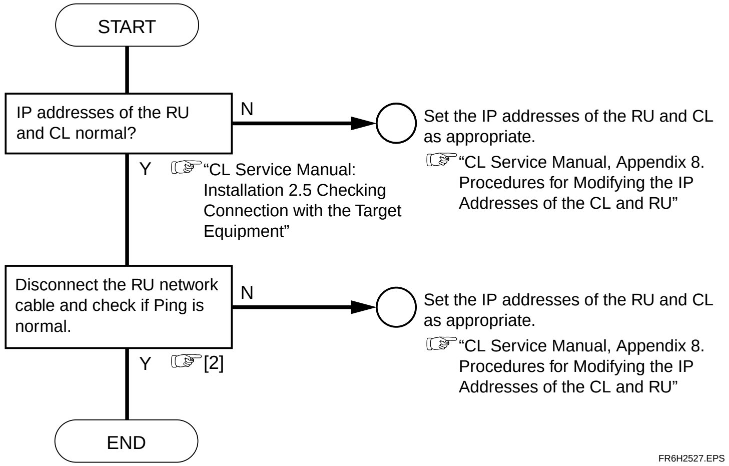

Ethernet operation LED
CPU operation LED
Unlit
Sub CPU LED
Main CPU LED

✻ When both of the main and sub CPUs are not operating, all the bits of the LED are lit or unlit.

FR6H2525.EPS

## 15.3 Checking the IP Address

### [1] Analysis Flow


START
IP addresses of the RU and CL normal?
N
Set the IP addresses of the RU and CL as appropriate.
☞“CL Service Manual, Appendix 8. Procedures for Modifying the IP Addresses of the CL and RU”
Y
☞“CL Service Manual: Installation 2.5 Checking Connection with the Target Equipment”
Disconnect the RU network cable and check if Ping is normal.
N
Set the IP addresses of the RU and CL as appropriate.
☞“CL Service Manual, Appendix 8. Procedures for Modifying the IP Addresses of the CL and RU”
Y
☞[2]
END

FR6H2527.EPS

### [2] Checking Ping with RU Network Cable Disconnected

[GOOD indication]

```
Pinging 172.16.1.10 with 32 bytes of data:

Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.

Ping statistics for 172.16.1.10:
    Packets: Sent = 4,Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

FR6H2530.EPS

[NG indication]

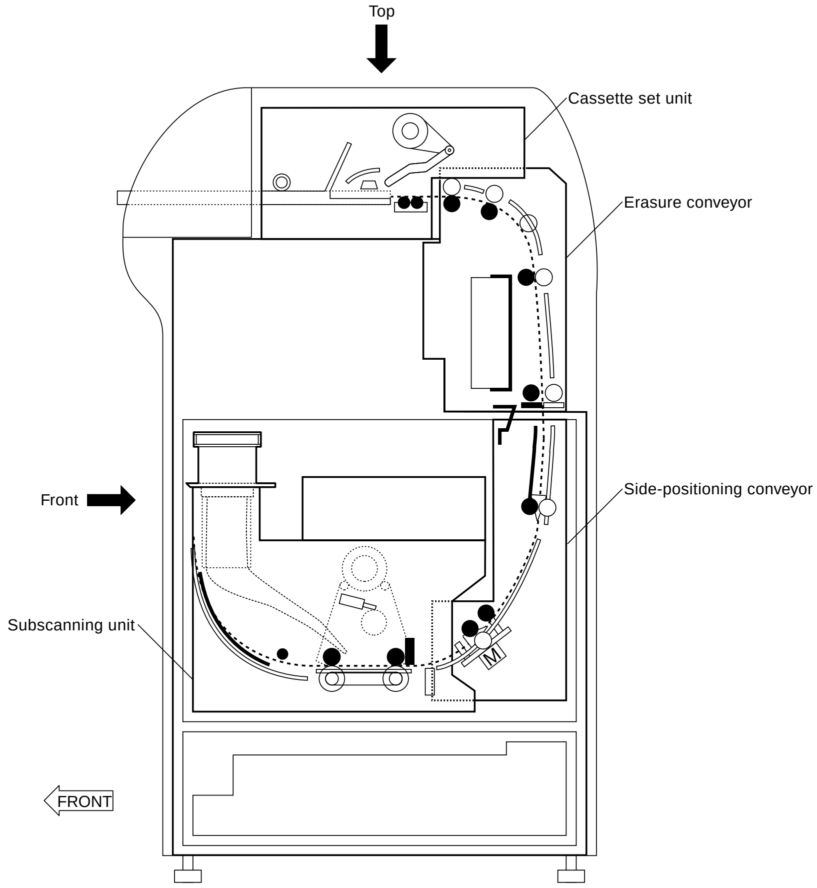
```
Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time<10ms TTL=255
Reply from 172.16.1.10: bytes=32 time<10ms TTL=255
Reply from 172.16.1.10: bytes=32 time<10ms TTL=255
Reply from 172.16.1.10: bytes=32 time<10ms TTL=255

Ping statistics for 172.16.1.10:
    Packets: Sent = 4,Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

FR6H2531.EPS

# 16. Troubleshooting Based on Scratches or Streaks in the IP Conveyance Direction

Scratches or streaks may occur on the IP due to IP conveyance roller edges or guides. If such scratches or streaks are found on the IP, measure the distance from the edge of the IP (reference side for IP conveyance) to the scratch or streak, and analyze the possible cause(s).

## 16.1 Troubleshooting Based on Scratches or Streaks on the IP Fluorescent Face (White)

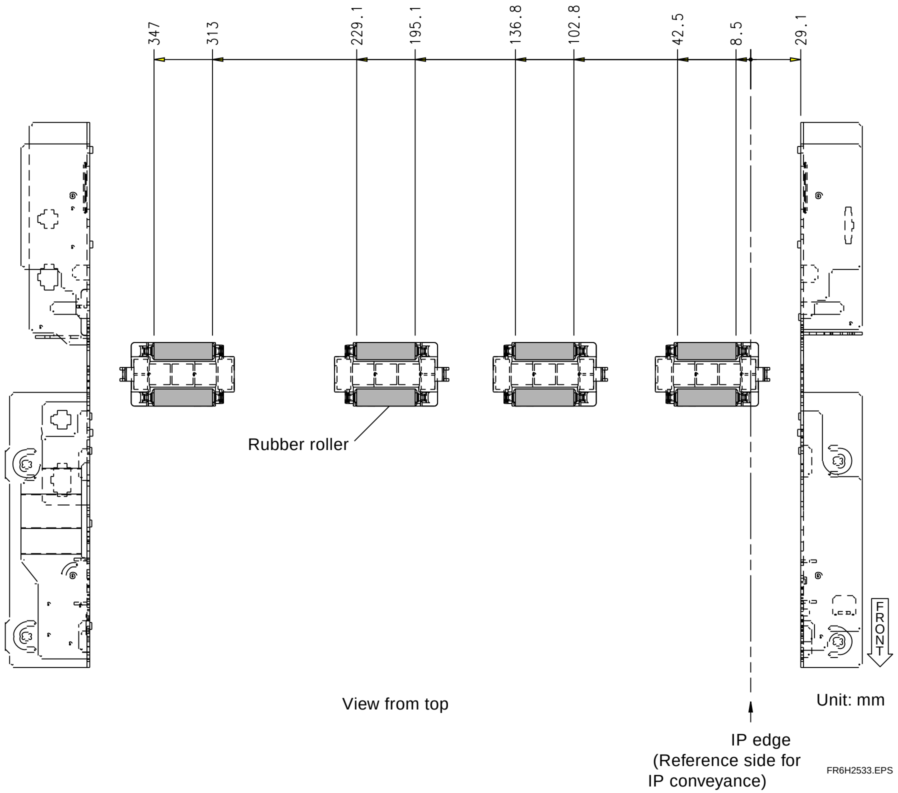

Top
Cassette set unit
Erasure conveyor
Front
Side-positioning conveyor
Subscanning unit
M
FRONT

Black portion: Part that may cause scratches or streaks on the IP fluorescent face (white)

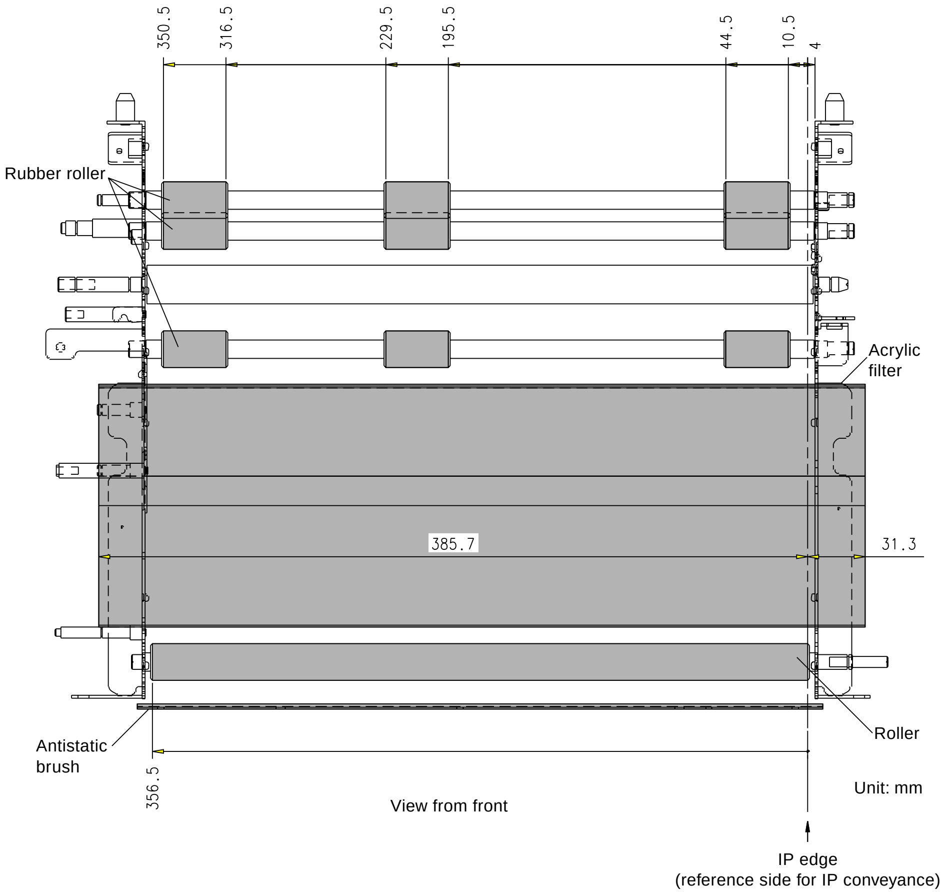
- - - : IP conveyance path

FR6H2532.EPS

### ■ Cassette Set Unit

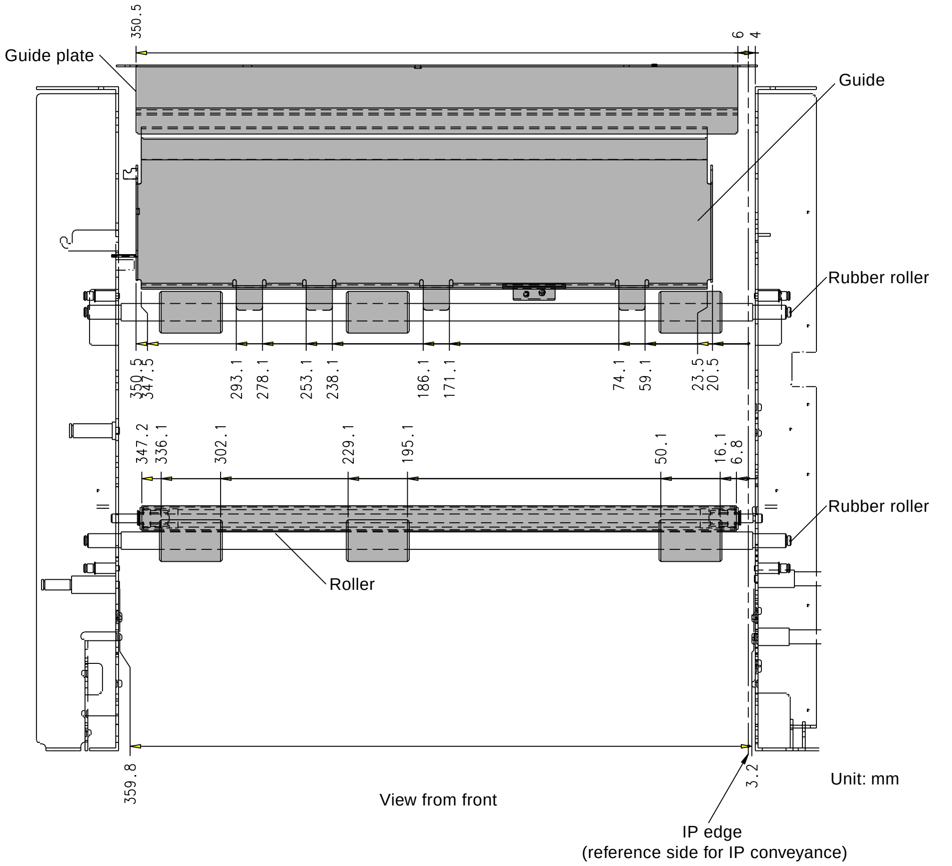

347
313
229.1
195.1
136.8
102.8
42.5
8.5
29.1
Rubber roller
FRONT
View from top
Unit: mm
IP edge
(Reference side for
IP conveyance)
FR6H2533.EPS

## ■ Erasure Conveyor


350.5
316.5
229.5
195.5
44.5
10.5
4
Rubber roller
Acrylic filter
385.7
31.3
Antistatic brush
Roller
356.5
Unit: mm
View from front
IP edge
(reference side for IP conveyance)

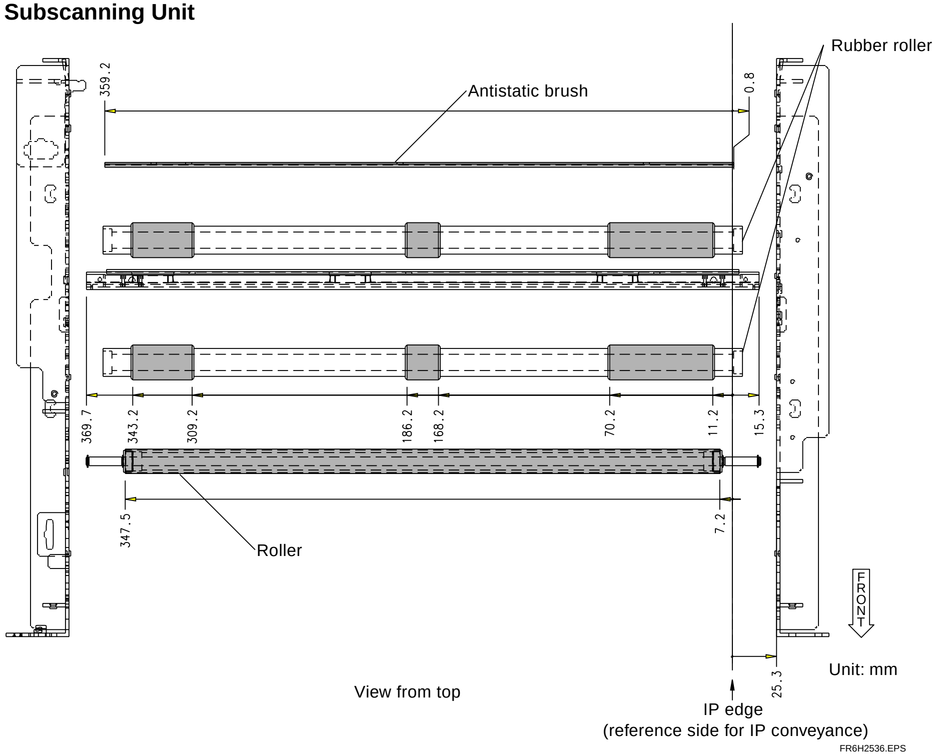
FR6H2534.EPS

## ■ Side-Positioning Conveyor

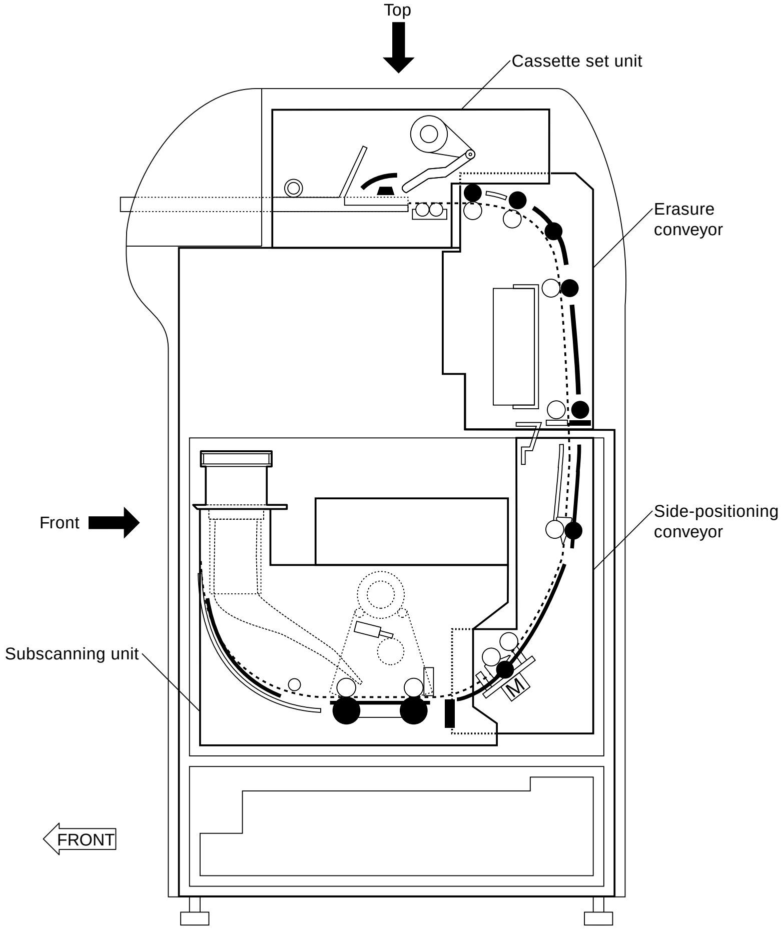

350.5
6
4
Guide plate
Guide
Rubber roller
350.5
347.5
293.1
278.1
253.1
238.1
186.1
171.1
74.1
59.1
23.5
20.5
347.2
336.1
302.1
229.1
195.1
50.1
16.1
6.8
Rubber roller
Roller
359.8
3.2
Unit: mm
View from front
IP edge
(reference side for IP conveyance)

FR6H2535.EPS

## ■ Subscanning Unit


Rubber roller
Antistatic brush
359.2
0.8
369.7
343.2
309.2
186.2
168.2
70.2
11.2
15.3
347.5
7.2
Roller
FRONT
Unit: mm
25.3
View from top
IP edge
(reference side for IP conveyance)
FR6H2536.EPS

## 16.2 Troubleshooting Based on Scratches or Streaks on the IP Back Face (Black)

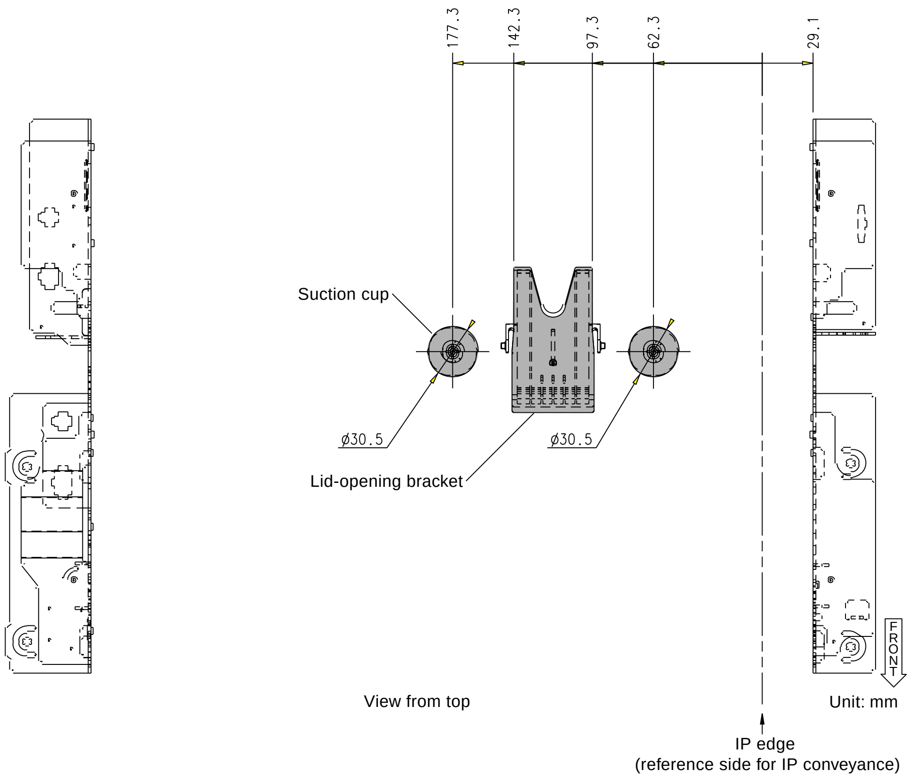

Top
Cassette set unit
Erasure conveyor
Front
Side-positioning conveyor
Subscanning unit
M
FRONT

Black portion: Part that may cause scratches or streaks on the IP back face (black)

- - - : IP conveyance path

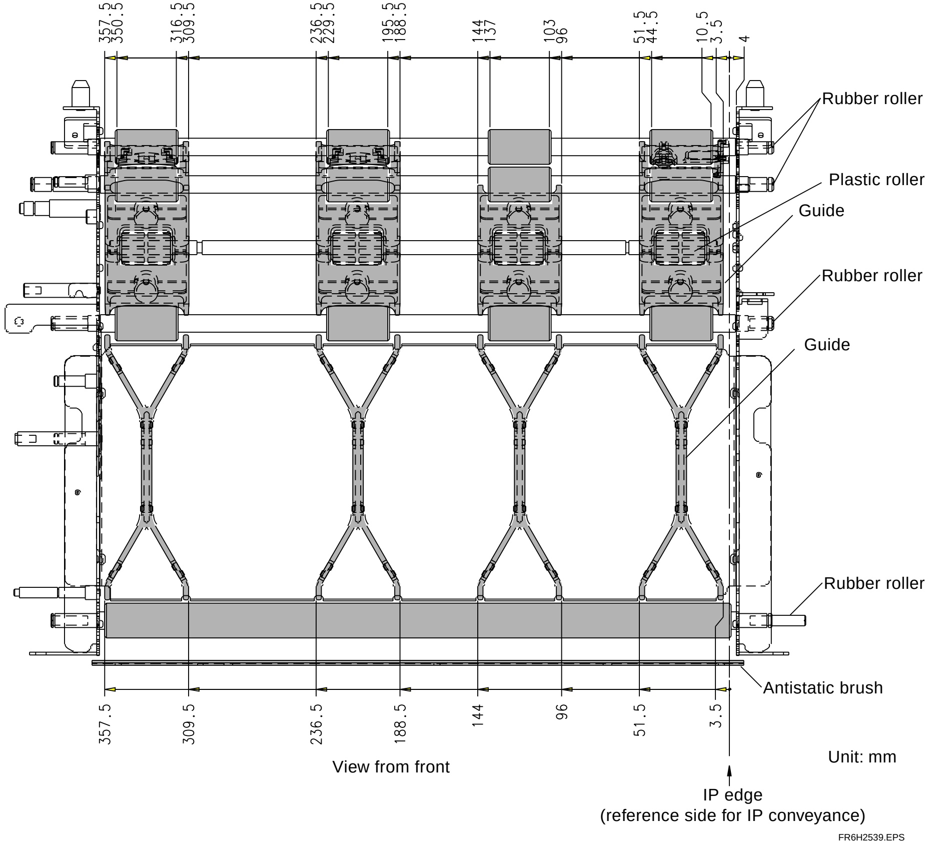
FR6H2537.EPS

### ■ Cassette Set Unit

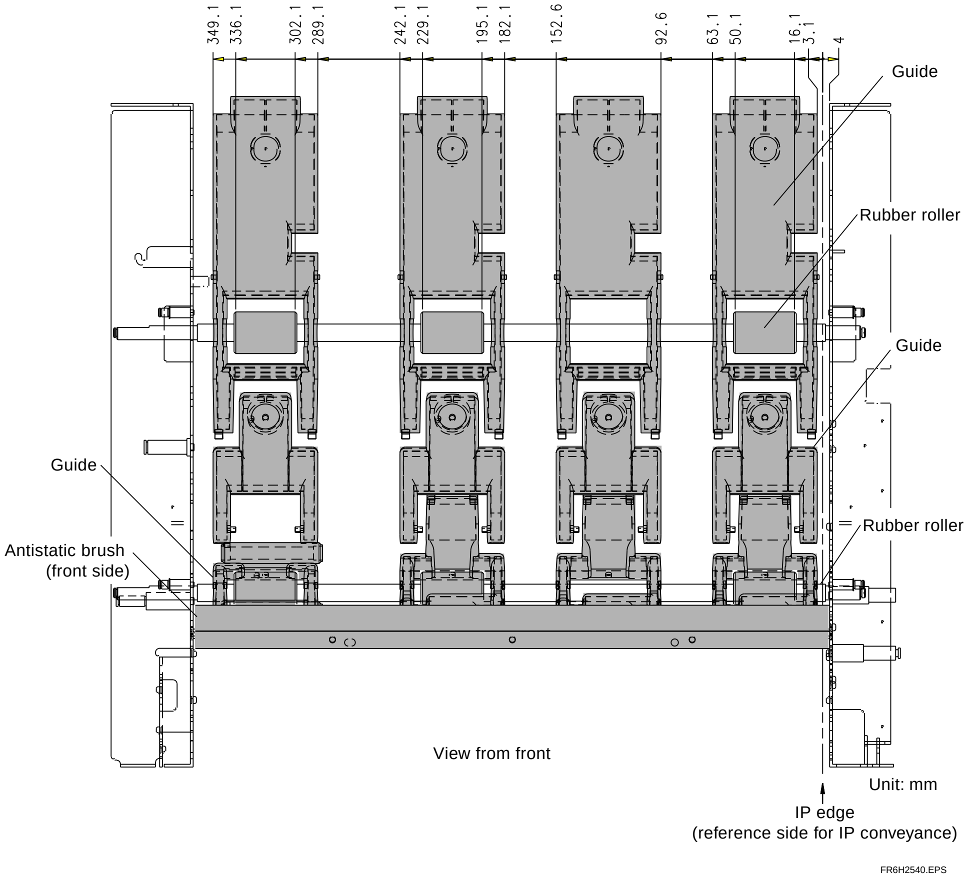

177.3
142.3
97.3
62.3
29.1
Suction cup
ø30.5
ø30.5
Lid-opening bracket
View from top
Unit: mm
IP edge
(reference side for IP conveyance)
FRONT

FR6H2538.EPS

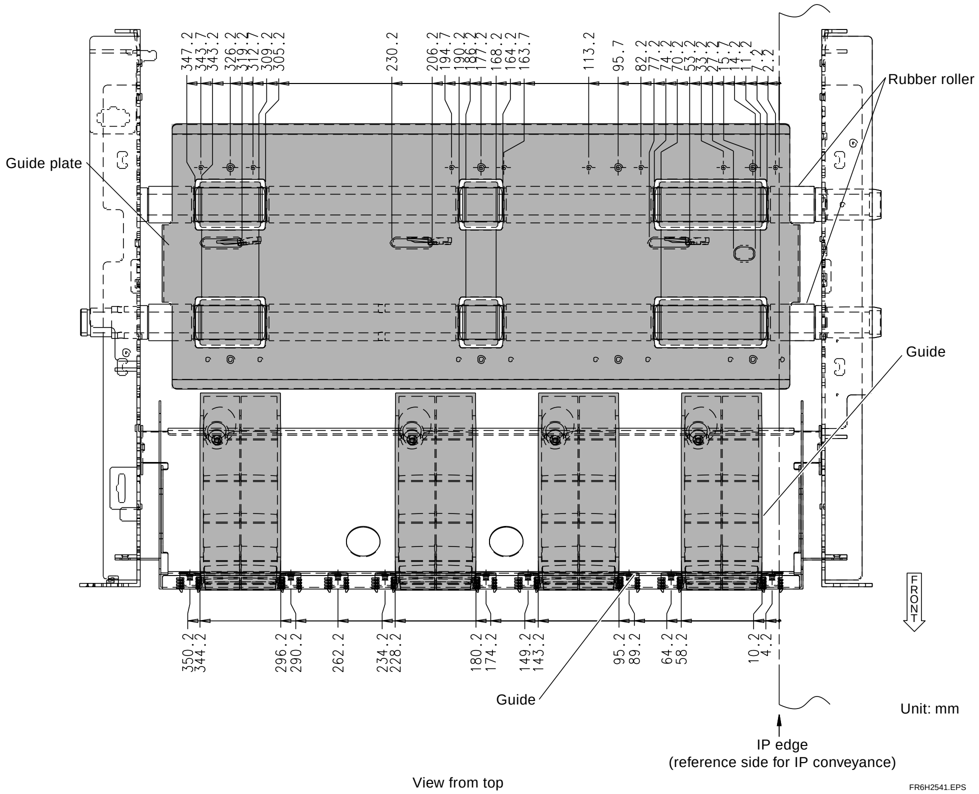
## ■ Erasure Conveyor


357.5
350.5
316.5
309.5
236.5
229.5
195.5
188.5
144
137
103
96
51.5
44.5
10.5
3.5
4
Rubber roller
Plastic roller
Guide
Rubber roller
Guide
Rubber roller
Antistatic brush
357.5
309.5
236.5
188.5
144
96
51.5
3.5
View from front
Unit: mm
IP edge
(reference side for IP conveyance)
FR6H2539.EPS

## ■ Side-Positioning Conveyor


349.1
336.1
302.1
289.1
242.1
229.1
195.1
182.1
152.6
92.6
63.1
50.1
16.1
3.1
4
Guide
Rubber roller
Guide
Guide
Rubber roller
Antistatic brush
(front side)
View from front
Unit: mm
IP edge
(reference side for IP conveyance)
FR6H2540.EPS

## ■ Subscanning Unit

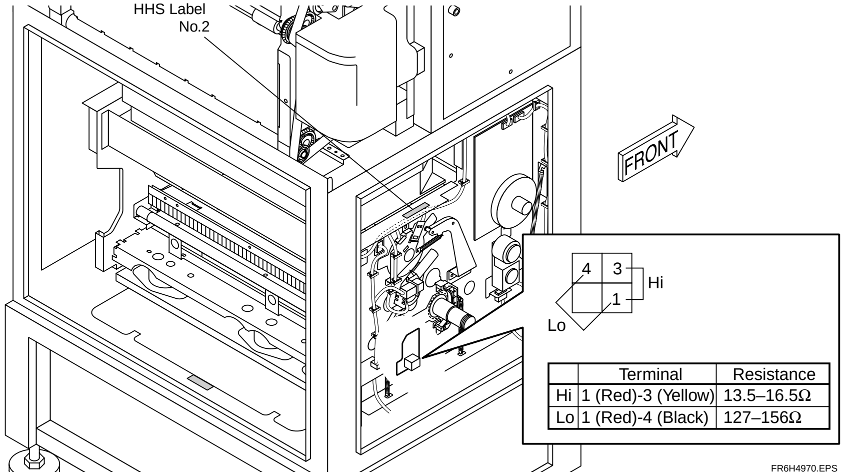

347.2
343.7
343.2
326.2
319.2
312.7
309.2
305.2
230.2
206.2
194.7
190.2
186.2
177.2
168.2
164.2
163.7
113.2
95.7
82.2
77.2
74.2
70.2
53.2
33.2
27.7
15.2
14.2
11.2
7.2
2.2
Rubber roller
Guide plate
Guide
FRONT
350.2
344.2
296.2
290.2
262.2
234.2
228.2
180.2
174.2
149.2
143.2
95.2
89.2
64.2
58.2
10.2
4.2
Guide
Unit: mm
IP edge
(reference side for IP conveyance)
FR6H2541.EPS

View from top

## 16.3 Checking the Resistance Value of the Solenoid Connector

### ■ Checking the Resistance Value

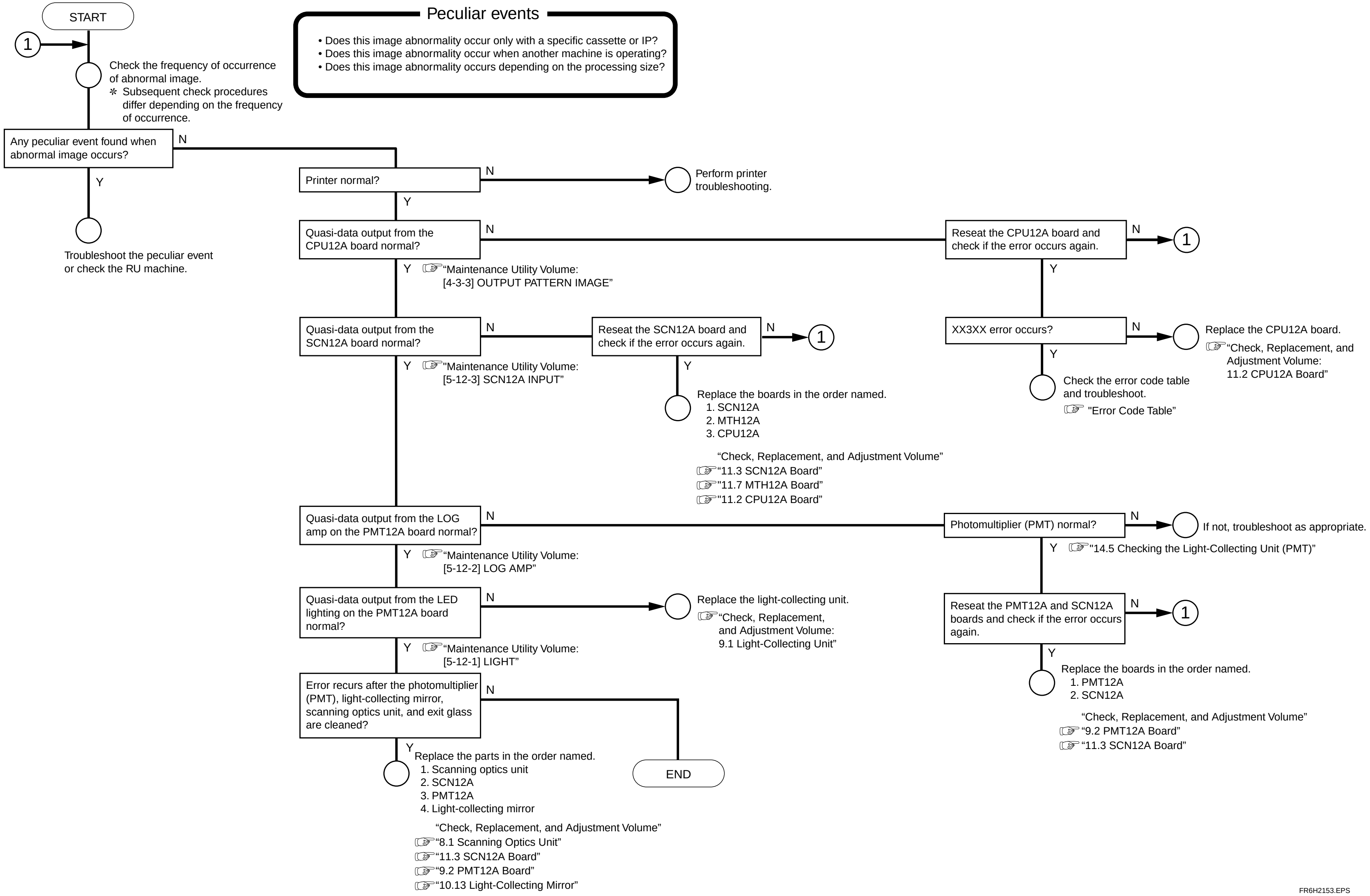
The reference for the solenoid connector resistance value is shown below.


HHS Label
No.2
FRONT
4
3
Hi
1
Lo
FR6H4970.EPS

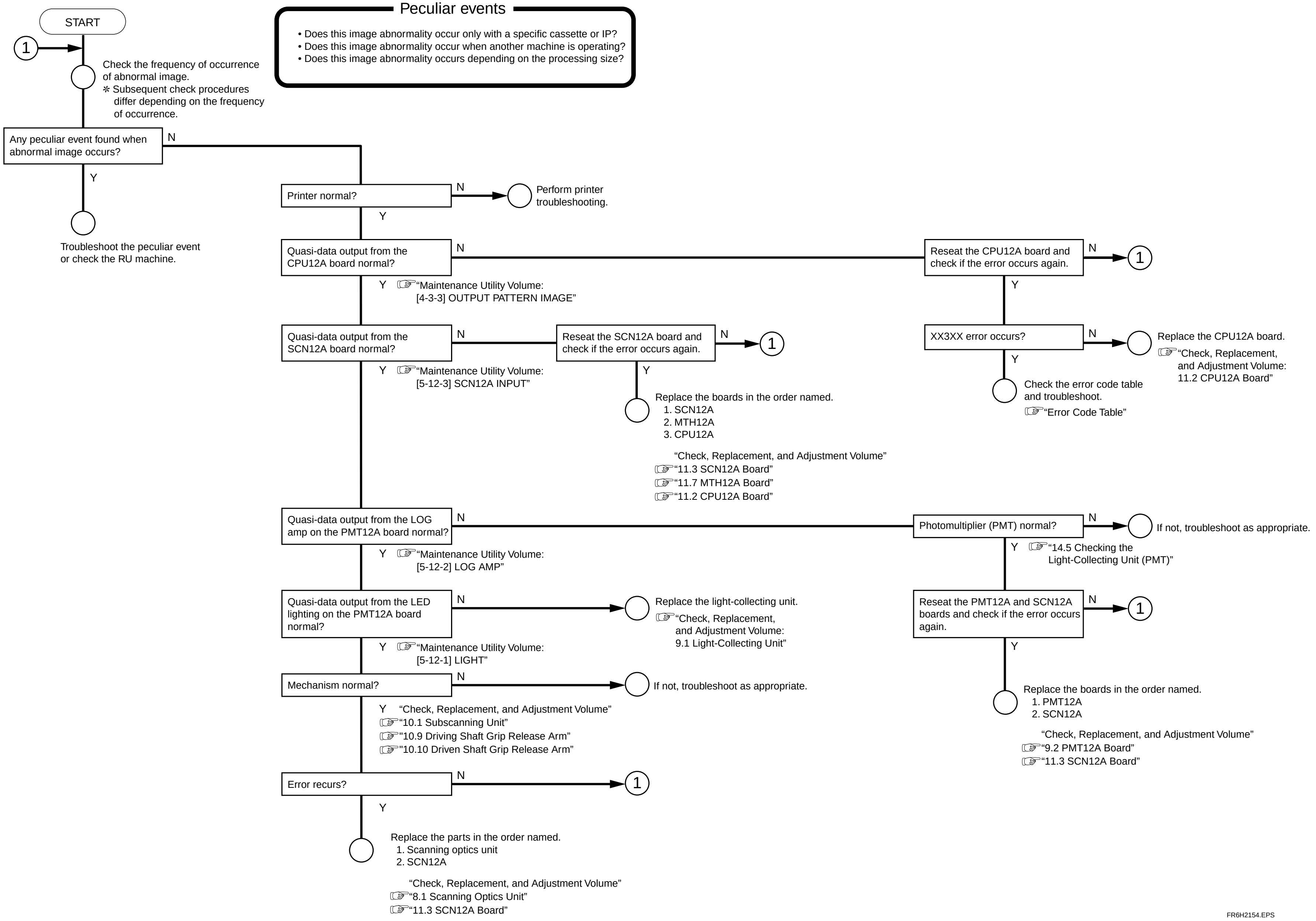
| | Terminal | Resistance |
|---|---|---|
| Hi | 1 (Red)-3 (Yellow) | 13.5–16.5Ω |
| Lo | 1 (Red)-4 (Black) | 127–156Ω |

# 17. Image Troubleshooting Flow

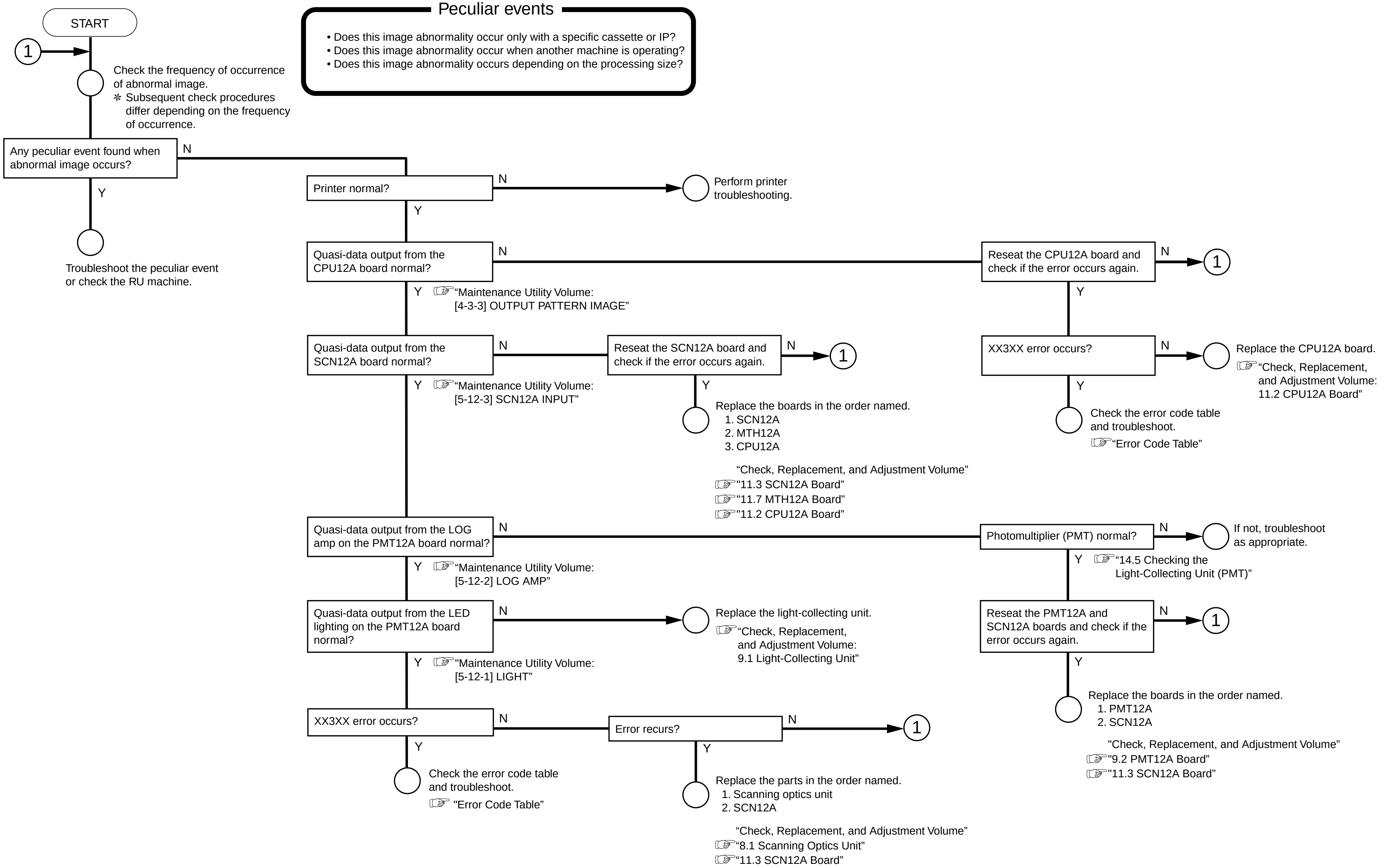
## [1] Vertical Streaks


START
1
Check the frequency of occurrence of abnormal image.
✻ Subsequent check procedures differ depending on the frequency of occurrence.
Peculiar events
• Does this image abnormality occur only with a specific cassette or IP?
• Does this image abnormality occur when another machine is operating?
• Does this image abnormality occurs depending on the processing size?
Any peculiar event found when abnormal image occurs?
N
Y
Troubleshoot the peculiar event or check the RU machine.
Printer normal?
N
Perform printer troubleshooting.
Y
Quasi-data output from the CPU12A board normal?
N
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
Y ☞"Maintenance Utility Volume: [4-3-3] OUTPUT PATTERN IMAGE"
Quasi-data output from the SCN12A board normal?
N
Reseat the SCN12A board and check if the error occurs again.
N
1
Y
Replace the boards in the order named.
1. SCN12A
2. MTH12A
3. CPU12A
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.7 MTH12A Board"
☞"11.2 CPU12A Board"
Y ☞"Maintenance Utility Volume: [5-12-3] SCN12A INPUT"
XX3XX error occurs?
N
Replace the CPU12A board.
☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"
Y
Check the error code table and troubleshoot.
☞ "Error Code Table"
Quasi-data output from the LOG amp on the PMT12A board normal?
N
Photomultiplier (PMT) normal?
N
If not, troubleshoot as appropriate.
Y ☞"14.5 Checking the Light-Collecting Unit (PMT)"
Y ☞"Maintenance Utility Volume: [5-12-2] LOG AMP"
Reseat the PMT12A and SCN12A boards and check if the error occurs again.
N
1
Y
Replace the boards in the order named.
1. PMT12A
2. SCN12A
"Check, Replacement, and Adjustment Volume"
☞"9.2 PMT12A Board"
☞"11.3 SCN12A Board"
Quasi-data output from the LED lighting on the PMT12A board normal?
N
Replace the light-collecting unit.
☞"Check, Replacement, and Adjustment Volume: 9.1 Light-Collecting Unit"
Y ☞"Maintenance Utility Volume: [5-12-1] LIGHT"
Error recurs after the photomultiplier (PMT), light-collecting mirror, scanning optics unit, and exit glass are cleaned?
N
END
Y
Replace the parts in the order named.
1. Scanning optics unit
2. SCN12A
3. PMT12A
4. Light-collecting mirror
"Check, Replacement, and Adjustment Volume"
☞"8.1 Scanning Optics Unit"
☞"11.3 SCN12A Board"
☞"9.2 PMT12A Board"
☞"10.13 Light-Collecting Mirror"
FR6H2153.EPS

## [2] Horizontal Streaks


START
1
Check the frequency of occurrence of abnormal image.
✻ Subsequent check procedures differ depending on the frequency of occurrence.
Peculiar events
• Does this image abnormality occur only with a specific cassette or IP?
• Does this image abnormality occur when another machine is operating?
• Does this image abnormality occurs depending on the processing size?
Any peculiar event found when abnormal image occurs?
N
Y
Troubleshoot the peculiar event or check the RU machine.
Printer normal?
N
Perform printer troubleshooting.
Y
Quasi-data output from the CPU12A board normal?
N
Reseat the CPU12A board and check if the error occurs again.
N
1
Y
Y
☞"Maintenance Utility Volume: [4-3-3] OUTPUT PATTERN IMAGE"
XX3XX error occurs?
N
Replace the CPU12A board.
☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"
Y
Check the error code table and troubleshoot.
☞"Error Code Table"
Quasi-data output from the SCN12A board normal?
N
Reseat the SCN12A board and check if the error occurs again.
N
1
Y
Replace the boards in the order named.
1. SCN12A
2. MTH12A
3. CPU12A
"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.7 MTH12A Board"
☞"11.2 CPU12A Board"
Y
☞"Maintenance Utility Volume: [5-12-3] SCN12A INPUT"
Quasi-data output from the LOG amp on the PMT12A board normal?
N
Photomultiplier (PMT) normal?
N
If not, troubleshoot as appropriate.
Y
☞"14.5 Checking the Light-Collecting Unit (PMT)"
Reseat the PMT12A and SCN12A boards and check if the error occurs again.
N
1
Y
Replace the boards in the order named.
1. PMT12A
2. SCN12A
"Check, Replacement, and Adjustment Volume"
☞"9.2 PMT12A Board"
☞"11.3 SCN12A Board"
Y
☞"Maintenance Utility Volume: [5-12-2] LOG AMP"
Quasi-data output from the LED lighting on the PMT12A board normal?
N
Replace the light-collecting unit.
☞"Check, Replacement, and Adjustment Volume: 9.1 Light-Collecting Unit"
Y
☞"Maintenance Utility Volume: [5-12-1] LIGHT"
Mechanism normal?
N
If not, troubleshoot as appropriate.
Y
"Check, Replacement, and Adjustment Volume"
☞"10.1 Subscanning Unit"
☞"10.9 Driving Shaft Grip Release Arm"
☞"10.10 Driven Shaft Grip Release Arm"
Error recurs?
N
1
Y
Replace the parts in the order named.
1. Scanning optics unit
2. SCN12A
"Check, Replacement, and Adjustment Volume"
☞"8.1 Scanning Optics Unit"
☞"11.3 SCN12A Board"
FR6H2154.EPS

## [3] Other Abnormal Image



Peculiar events

- Does this image abnormality occur only with a specific cassette or IP?
- Does this image abnormality occur when another machine is operating?
- Does this image abnormality occurs depending on the processing size?

START

Check the frequency of occurrence of abnormal image.
✻ Subsequent check procedures differ depending on the frequency of occurrence.

Any peculiar event found when abnormal image occurs?

Troubleshoot the peculiar event or check the RU machine.

Printer normal?

Perform printer troubleshooting.

Quasi-data output from the CPU12A board normal?

☞"Maintenance Utility Volume: [4-3-3] OUTPUT PATTERN IMAGE"

Reseat the CPU12A board and check if the error occurs again.

XX3XX error occurs?

Replace the CPU12A board.
☞"Check, Replacement, and Adjustment Volume: 11.2 CPU12A Board"

Check the error code table and troubleshoot.
☞"Error Code Table"

Quasi-data output from the SCN12A board normal?

☞"Maintenance Utility Volume: [5-12-3] SCN12A INPUT"

Reseat the SCN12A board and check if the error occurs again.

Replace the boards in the order named.
1. SCN12A
2. MTH12A
3. CPU12A

"Check, Replacement, and Adjustment Volume"
☞"11.3 SCN12A Board"
☞"11.7 MTH12A Board"
☞"11.2 CPU12A Board"

Quasi-data output from the LOG amp on the PMT12A board normal?

☞"Maintenance Utility Volume: [5-12-2] LOG AMP"

Photomultiplier (PMT) normal?

If not, troubleshoot as appropriate.

☞"14.5 Checking the Light-Collecting Unit (PMT)"

Quasi-data output from the LED lighting on the PMT12A board normal?

Replace the light-collecting unit.
☞"Check, Replacement, and Adjustment Volume: 9.1 Light-Collecting Unit"

☞"Maintenance Utility Volume: [5-12-1] LIGHT"

Reseat the PMT12A and SCN12A boards and check if the error occurs again.

Replace the boards in the order named.
1. PMT12A
2. SCN12A

"Check, Replacement, and Adjustment Volume"
☞"9.2 PMT12A Board"
☞"11.3 SCN12A Board"

XX3XX error occurs?

Check the error code table and troubleshoot.
☞ "Error Code Table"

Error recurs?

Replace the parts in the order named.
1. Scanning optics unit
2. SCN12A

"Check, Replacement, and Adjustment Volume"
☞"8.1 Scanning Optics Unit"
☞"11.3 SCN12A Board"

FR6H2155.EPS

# CR-IR346RU Service Manual

## Checks, Replacement and Adjustment of Parts (MC)

# CR-IR346RU Service Manual – Contents

## Checks, Replacement and Adjustment of Parts (MC)

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   4.2 Inverter Assembly ........ MC-12

   4.3 Fan (FAN4) ........ MC-14

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   5.1 Shelf Cover Assembly ........ MC-20

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6. Removing and Reinstalling the Erasure Conveyor ........ MC-60
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  6.4 Lamp ........ MC-68
  6.5 Lamp Socket ........ MC-72
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  6.7 Duct Box ........ MC-78
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  6.9 Timing Belt ........ MC-82
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  7.7 Motor (MC2) ........ MC-118
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10. Removing and Reinstalling the Subscanning Unit .......... MC-144
    10.1 Subscanning Unit .......... MC-144
    10.2 Kapton® Belt .......... MC-146
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    10.4 Solenoid (SolZ1) .......... MC-150
    10.5 Motor (MZ1) .......... MC-152
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    10.8 Sensor (SZ5) .......... MC-164
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## Control Sheet

| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10/10/2000 | 00 | New release (FM2887) | All pages |
| 08/30/2001 | 01 | Support for software version A05 (FM3058) | MC–2–4, 6, 8, 21, 32, 33, 59.1–59.4, 63, 122, 134, 138, 139, 150, 151, 151.1–151.4, 152–157, 164, 165.1–165.4, 178, 186–251 |
| 12/20/2001 | 03 | Changes in the procedures (FM3277) | MC–1, 6, 186, 187, 194–199, 203–211, 241, 243, 245, 252–259 |
| 02/20/2002 | 05 | Support for software version A07 (FM3328) | MC–1, 132, 133, 151, 151.2, 163, 165, 165.1, 165.2, 178, 179, 186–189, 194–281 |

# 1. Check/Adjustment Procedures for Each Unit

## Precautions for Check, Replacement, and Adjustment

- In this volume, descriptions are omitted regarding components that do not require special attention or adjustment during their removal/reinstallation. For removal procedures for such components, refer to the Parts List Volume.
- When performing check/replacement/adjustment procedures on the machine, the following precautions should be observed.

**WARNING**

*To avoid electric shock hazards, power OFF the machine before performing the procedures.*

**WARNING/CAUTION**

*Observe the warnings and cautions described in the "Safety Precautions."*

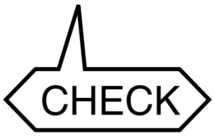
**CAUTIONS**

- *When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*
- *Do not remove the cover of the scanning optics unit.*
- *Never remove the red-painted screws.*

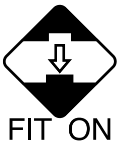
**◆ INSTRUCTION ◆**

*Some of the illustrations in this volume contain check/adjustment and half-punch indicators as needed.*
*For removal and reinstallation, perform the procedures as instructed by such indicators.*

- *Check/Adjustment indicator:* *Indicates that it is necessary to check or adjust the installation location when the part or component removed is to be reinstalled.*
  *This indicator is placed in the illustration that depicts the procedures for removing the parts and components.*
  *When you see this indicator, refer to its relevant '■ Check/ Adjustment Procedures."*

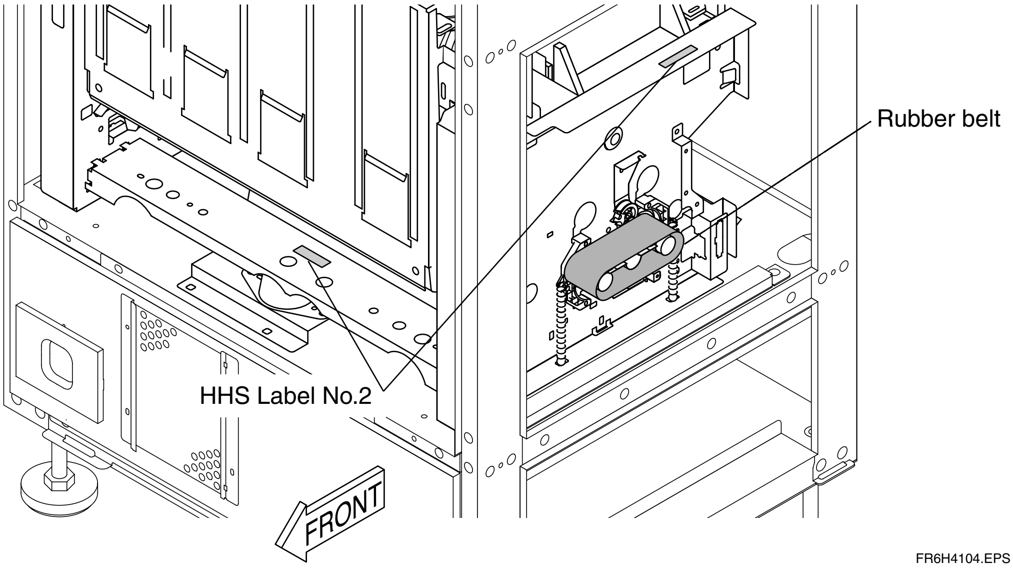


- *Half-punch indicator:* *Indicates that it is necessary to align the half-punches when installing the parts or components.*
  *However, it is not indicated for the half-punches for improving ease of assembly or preventing erroneous assembly procedures.*



### ◆ INSTRUCTIONS ◆

- *Never remove the rubber belt of the subscanning unit, except for its replacement.*



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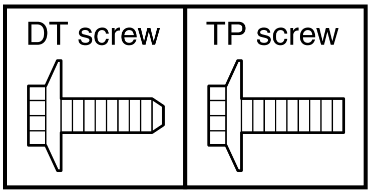
- *The yellow-painted screws require adjustments when components are reinstalled. When reinstalling the components, follow the check/adjustment procedures.*

### ◆ NOTE ◆

*The TP screw used to secure the ground wire is similar in shape to a DT screw. When attaching the screw, check its shape to avoid confusing it with a wrong one.*



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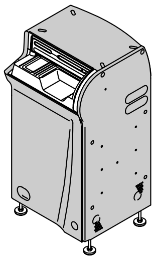
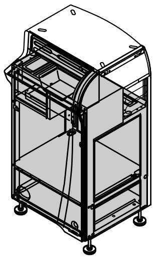
# 2. Table of Contents

3. Covers



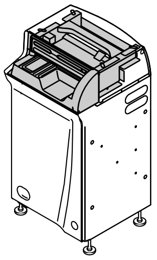
3. Removing and Reinstalling the Covers MC-8
3.1 Covers MC-8

4. Housings



4. Removing and Reinstalling the Housings MC-10
4.1 INV12B Board MC-10
4.2 Inverter Assembly MC-12
4.3 Fan (FAN4) MC-14
4.4 INV12A Board MC-16
4.5 Fan (FAN3) MC-18

5. Cassette Set Unit



5. Removing and Reinstalling the Cassette Set Unit MC-20
5.1 Shelf Cover Assembly MC-20
5.2 Shutter MC-22
5.3 Cassette Set Unit MC-24
5.4 Wrong-Insertion Prevention Bracket Assembly MC-26
5.5 Solenoid (SolA1) MC-28
5.6 Hold Pin MC-30
5.7 Inch/Metric Changeover Guide MC-32
5.8 Suction Sensor (SA5) MC-34
5.9 Suction Cup MC-36
5.10 IP Removal Arm MC-40
5.11 Motor (MA1) MC-42
5.12 Roller MC-44
5.13 Guide Plate MC-48
5.14 Stopper MC-50
5.15 Actuator (Cassette IN Detection) MC-52
5.16 Sensor (SA2) MC-54
5.17 Roller Assembly MC-56
5.18 Movable Guide Assembly MC-58
5.19 Sensor (SA3) MC-59.1

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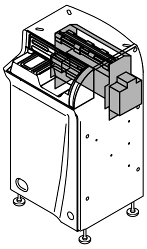
6. Erasure Conveyor



6. Removing and Reinstalling the Erasure Conveyor MC-60

6.1 Erasure Conveyor MC-60
6.2 Lamp Assembly MC-62
6.3 Thermal Switch (TSWB1) MC-66
6.4 Lamp MC-68
6.5 Lamp Socket MC-72
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6.8 Cleaning Roller Assembly MC-80
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6.10 Motor (MB1) MC-84
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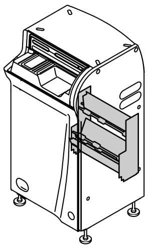
6.13 Rubber Rollers E and F MC-90
6.14 Rubber Rollers G and H MC-94
6.15 Guides A and B MC-98
6.16 Guide C MC-100
6.17 Guide D MC-102

7. Side-Positioning Conveyor



7. Removing and Reinstalling the Side-Positioning Conveyor MC-104

7.1 Side-Positioning Conveyor MC-104
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7.5 Upper Grip Roller MC-112
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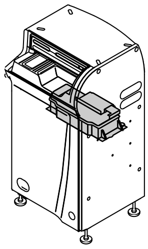
7.7 Motor (MC2) MC-118
7.8 Motor (MC3) MC-119
7.9 Latch Driver MC-120
7.10 Latch Assembly (Latch Driver) MC-124
7.11 Latch Assembly (Right-Hand Side) MC-126
7.12 Movable Guide MC-128
7.13 Upper-Stage Guide MC-130

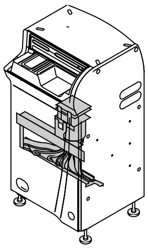
8. Scanning Optics Unit



8. Removing and Reinstalling the Scanning Optics Unit MC-132

8.1 Scanning Optics Unit MC-132

9. Light-Collecting Unit



9. Removing and Reinstalling the Light-Collecting Unit MC-136

9.1 Light-Collecting Unit MC-136
9.2 PMT12A Board MC-142

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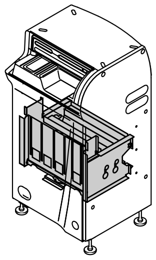
## 10. Subscanning Unit



10. Removing and Reinstalling the Subscanning Unit MC-144
10.1 Subscanning Unit MC-144
10.2 Kapton® Belt MC-146
10.3 Flywheel MC-148
10.4 Solenoid (SolZ1) MC-150
10.5 Motor (MZ1) MC-152
10.6 Motor (MZ2) MC-158
10.7 Motor (MZ3) MC-162
10.8 Sensor (SZ5) MC-164
10.9 Driving-Shaft Grip Release Arm MC-166
10.10 Driven-Shaft Grip Release Arm MC-170
10.11 Driving-Shaft Grip Roller (Upper) MC-172
10.12 Driven-Shaft Grip Roller (Upper) MC-174
10.13 Light-Collecting Mirror MC-176
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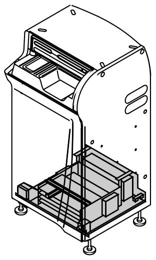
## 11. Controller



11. Removing and Reinstalling the Controller MC-182
11.1 Controller MC-182
11.2 Replacing the CPU12A Board MC-186
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11.4 DRV12A-1 Board MC-214
11.5 SNS12A Board MC-216
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11.9 Reset Switch MC-222
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## 12. Fuses

12. Replacing the Fuses and Fuse Locations MC-234
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12.4 DRV12A Board Fuses MC-239

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13.1.1 Uninstall Procedures MC-241
13.1.2 Install Procedures MC-243
13.2 Procedures for Updating the Version of the CR-IR346RU Application Software MC-245
13.3 Action to be Taken When the RU Application is Damaged MC-255

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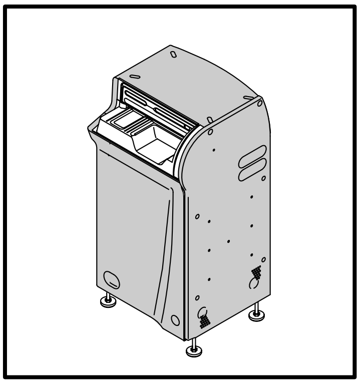
# 3. Removing and Reinstalling the Covers

## 3.1 Covers



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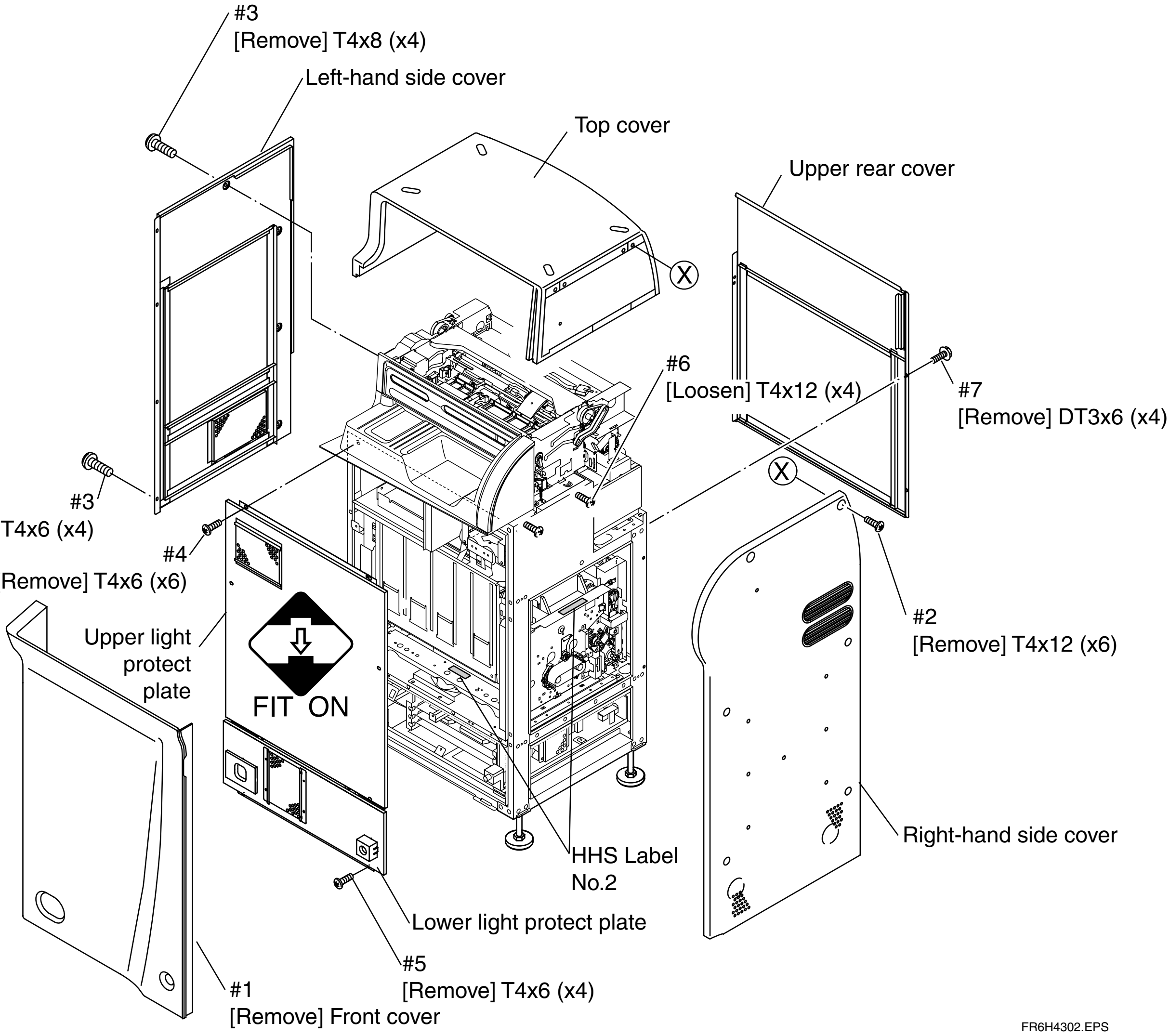
### ■ Removal Procedures

(1) Remove the covers.


#3
[Remove] T4x8 (x4)
Left-hand side cover
Top cover
Upper rear cover
#6
[Loosen] T4x12 (x4)
#7
[Remove] DT3x6 (x4)
#3
[Remove] T4x6 (x4)
#4
[Remove] T4x6 (x6)
Upper light protect plate
FIT ON
#2
[Remove] T4x12 (x6)
Right-hand side cover
HHS Label No.2
Lower light protect plate
#5
[Remove] T4x6 (x4)
#1
[Remove] Front cover

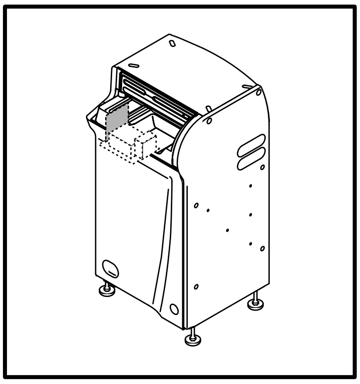
FR6H4302.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 4. Removing and Reinstalling the Housings

## 4.1 INV12B Board



FR6H4B51.EPS

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electric parts on the board.*

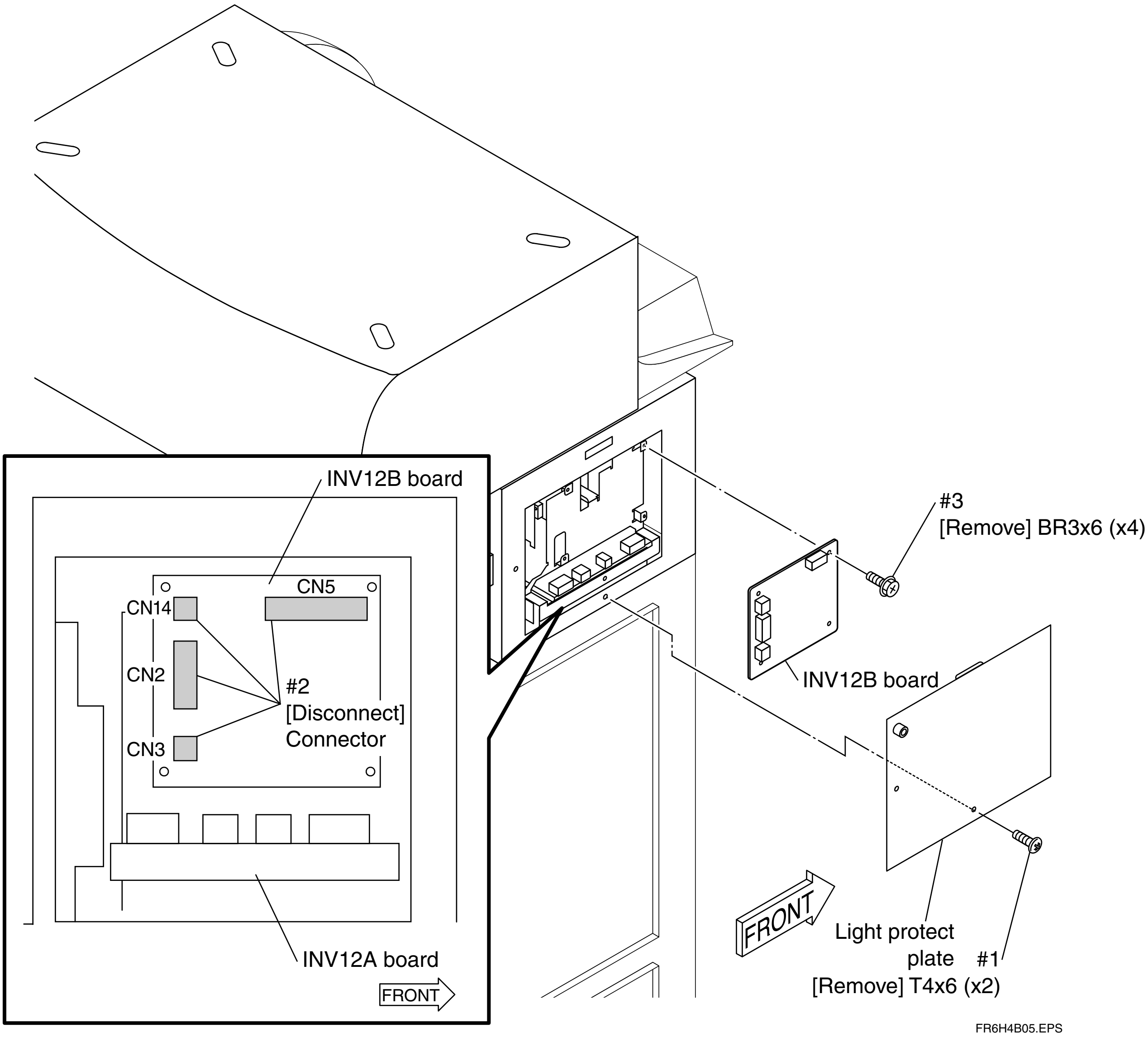
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Left-hand side cover

☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the INV12B Board.


INV12B board
CN5
CN14
CN2
CN3
#2
[Disconnect]
Connector
INV12A board
FRONT
#3
[Remove] BR3x6 (x4)
INV12B board
FRONT
Light protect
plate
#1
[Remove] T4x6 (x2)

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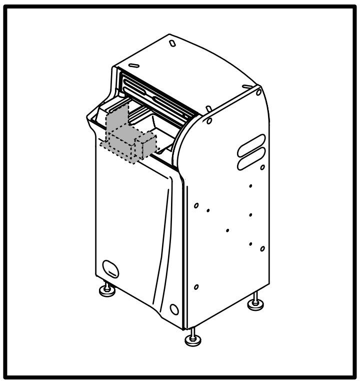
## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 4.2 Inverter Assembly



FR6H4B52.EPS

**CAUTION**

*When servicing the inverter assembly, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electric parts on the board mounted in the inverter assembly.*

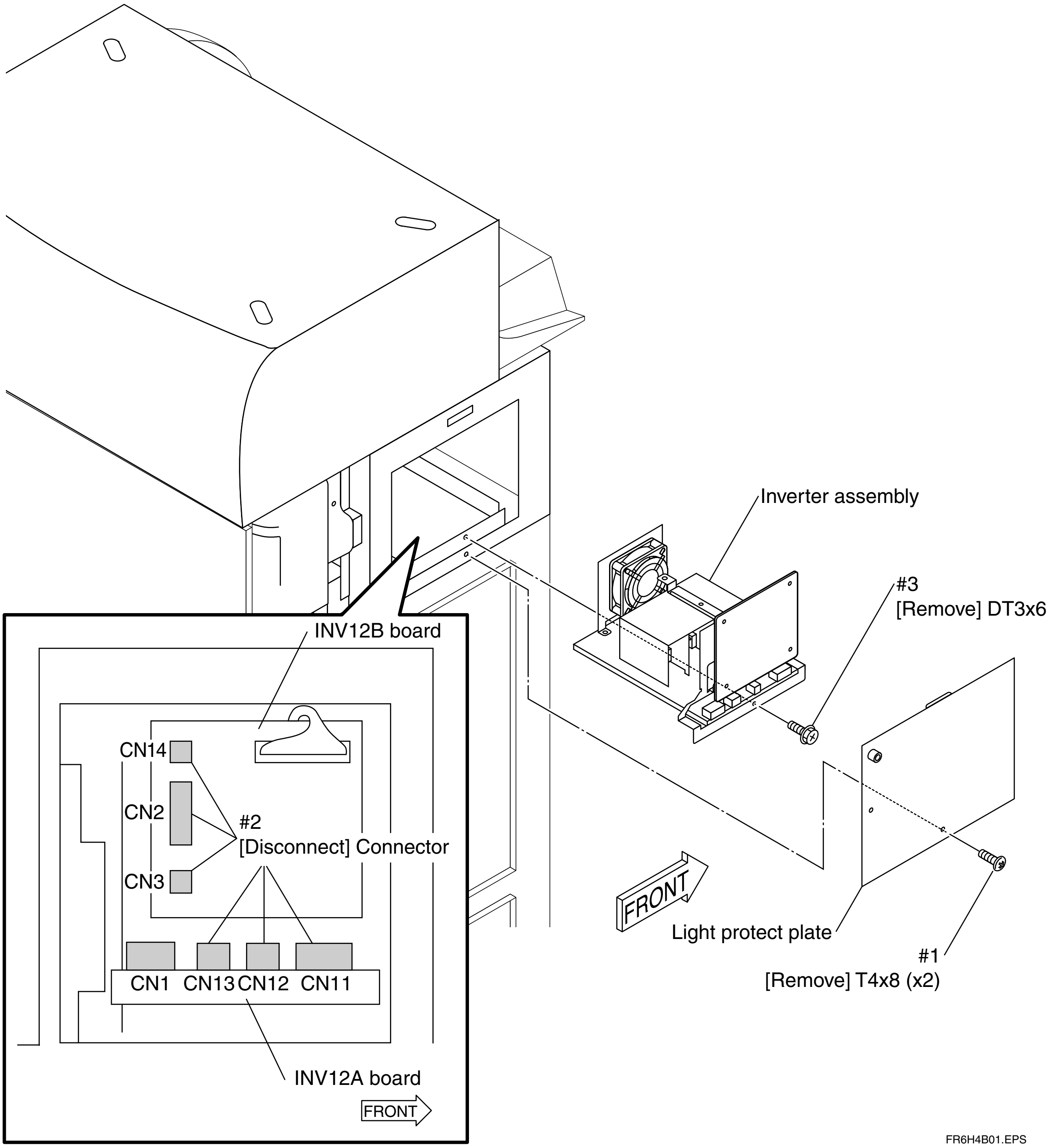
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Left-hand side cover

☞ "3.1 Removing and Reinstalling the Covers"

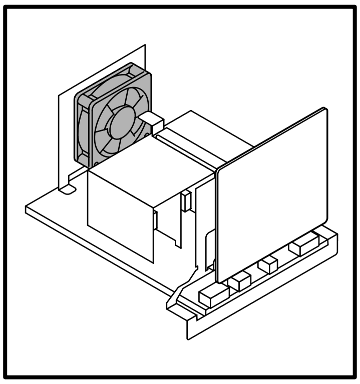
(2) Remove the inverter assembly.


Inverter assembly
#3
[Remove] DT3x6
INV12B board
CN14
CN2
#2
[Disconnect] Connector
CN3
CN1
CN13
CN12
CN11
INV12A board
FRONT
FRONT
Light protect plate
#1
[Remove] T4x8 (x2)
FR6H4B01.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 4.3 Fan (FAN4)



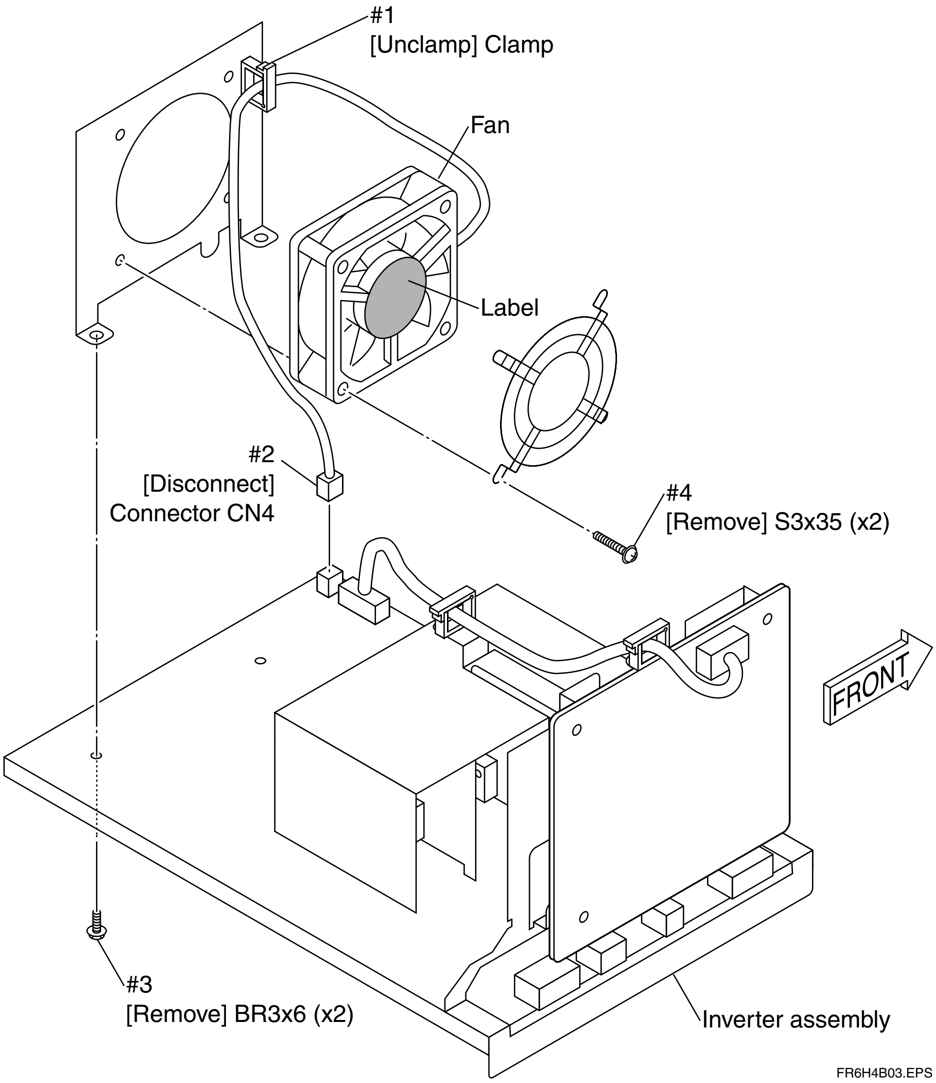
FR6H4B53.EPS

## ■ Removal Procedures

(1) Remove the inverter assembly.

☞ “4.2 Inverter Assembly”

(2) Remove the fan.


#1
[Unclamp] Clamp
Fan
Label
#2
[Disconnect]
Connector CN4
#4
[Remove] S3x35 (x2)
FRONT
#3
[Remove] BR3x6 (x2)
Inverter assembly
FR6H4B03.EPS

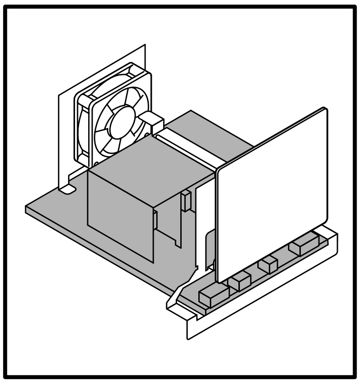
## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*When installing the fan, make sure that the label of the fan is oriented as shown in the illustration above.*

For reinstallation, reverse the removal steps.

# 4.4 INV12A Board



FR6H4B55.EPS

**CAUTION**

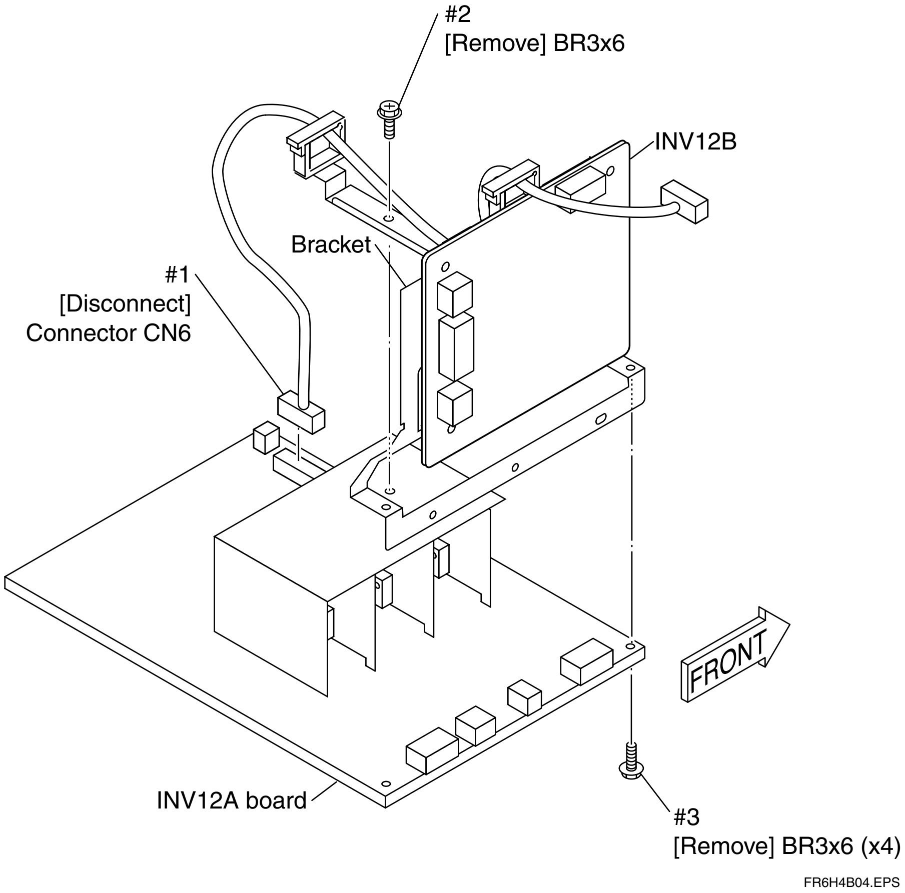
*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electric parts on the board mounted in the inverter assembly.*

## ■ Removal Procedures

(1) Remove the fan (FAN4).

☞ "4.3 Fan (FAN4)"

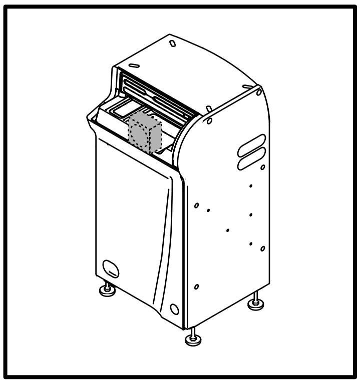
(2) Remove the INV12A board.


#2
[Remove] BR3x6
INV12B
Bracket
#1
[Disconnect]
Connector CN6
FRONT
INV12A board
#3
[Remove] BR3x6 (x4)
FR6H4B04.EPS

## ■ Reinstallation Procedure

For reinstallation, reverse the removal steps.

## 4.5 Fan (FAN3)



FR6H4B54.EPS

### ■ Removal Procedures

(1) Remove the inverter assembly.

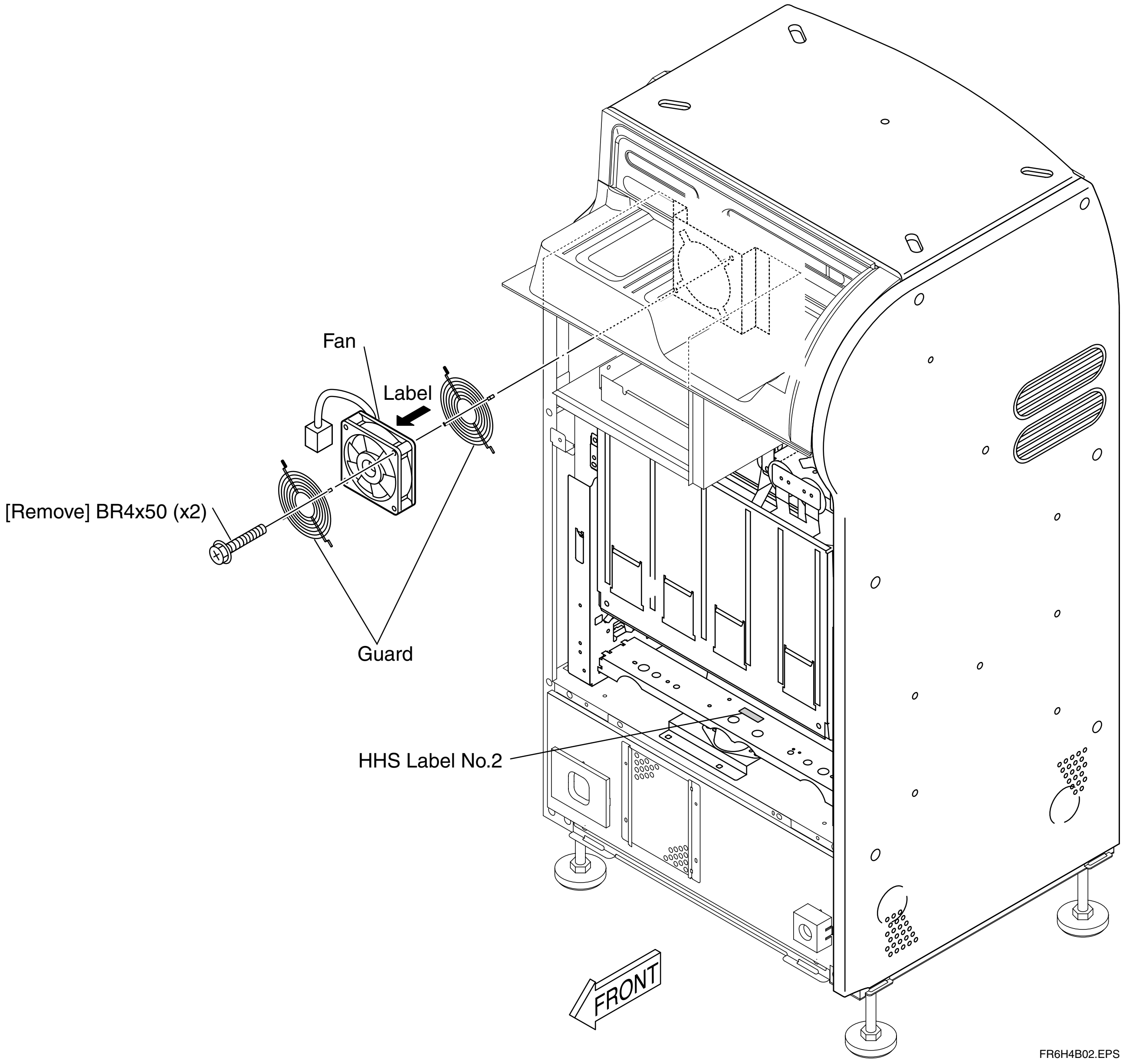
☞ “4.2 Inverter Assembly”

(2) Remove the covers.

- Front cover
- Upper light protect plate

☞ “3.1 Removing and Reinstalling the Covers”

(3) Remove the fan.


Fan
Label
[Remove] BR4x50 (x2)
Guard
HHS Label No.2
FRONT
FR6H4B02.EPS

## ■ Reinstallation Procedures

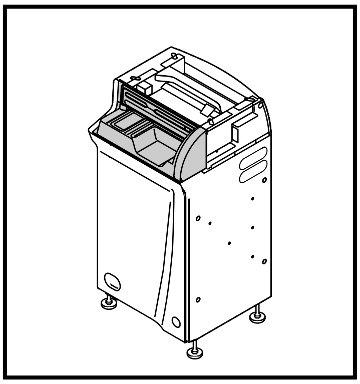
**◆ *INSTRUCTION* ◆**

*When installing the fan, make sure that the label of the fan is oriented as shown in the illustration above.*

For reinstallation, reverse the removal steps.

# 5. Removing and Reinstalling the Cassette Set Unit

## 5.1 Shelf Cover Assembly



FR6H4442.EPS

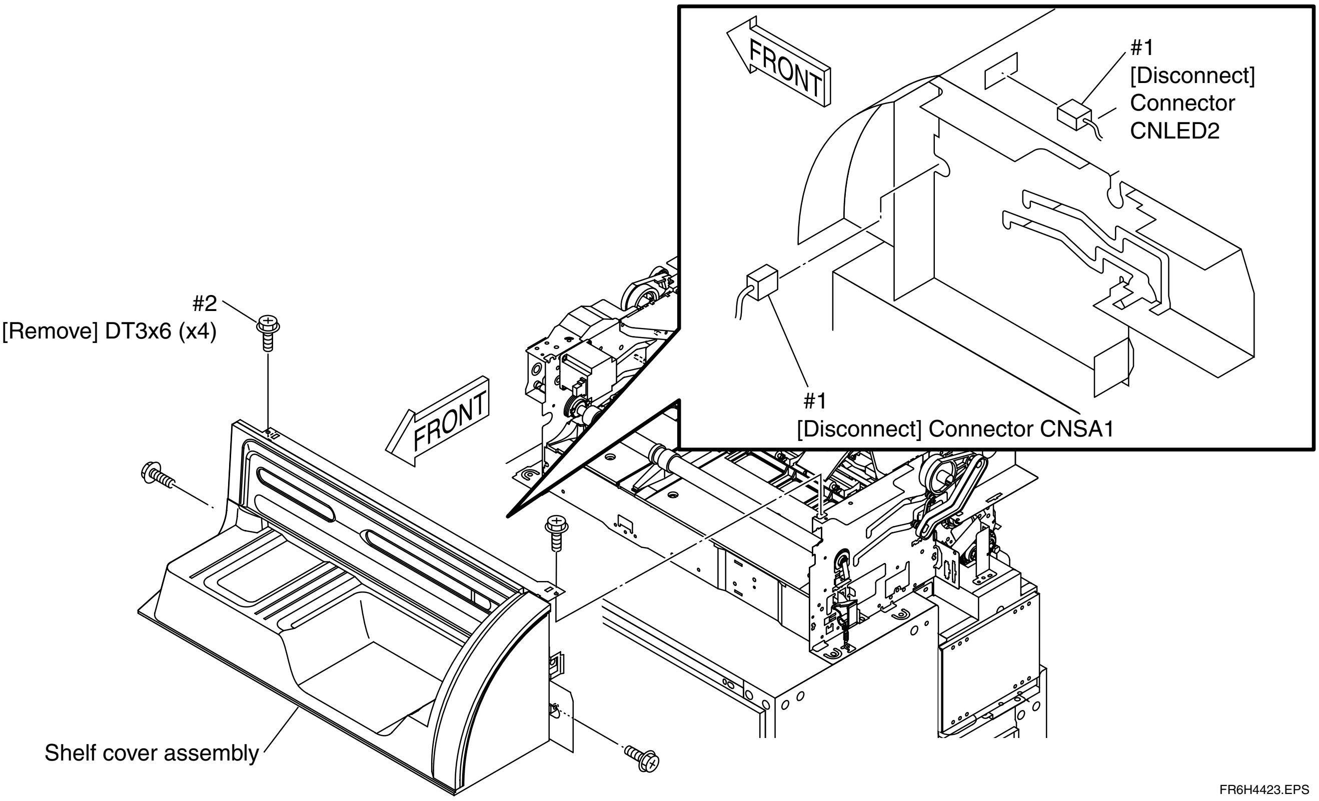
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

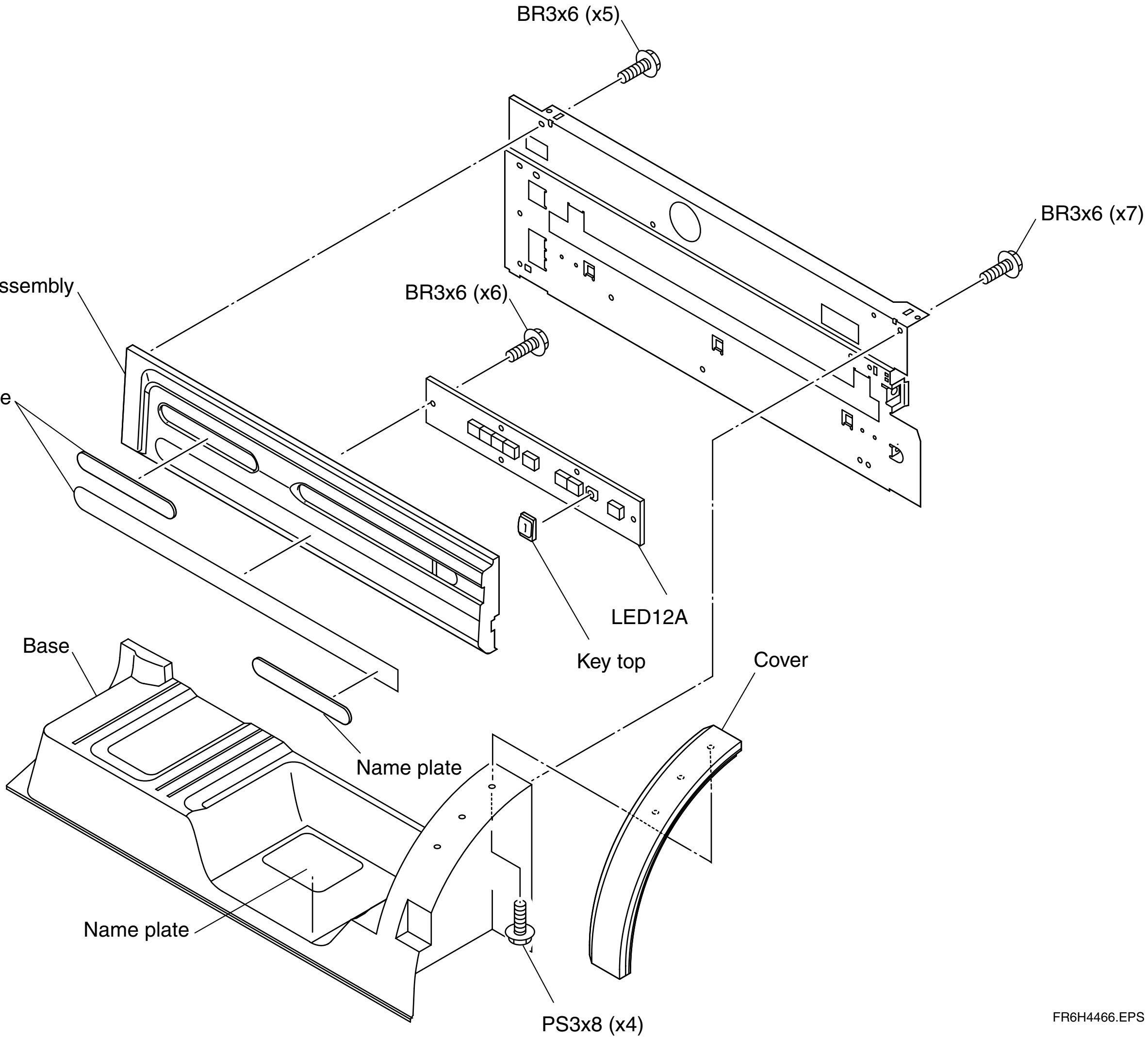
☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the shelf cover assembly.


FRONT
#1
[Disconnect]
Connector
CNLED2
#1
[Disconnect] Connector CNSA1
#2
[Remove] DT3x6 (x4)
FRONT
Shelf cover assembly

FR6H4423.EPS

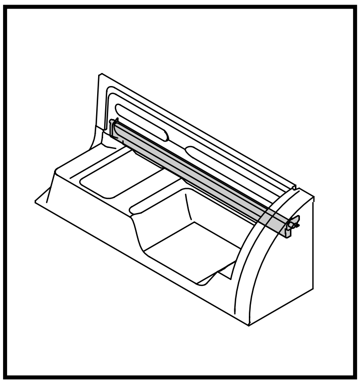
## ■ Exploded View


BR3x6 (x5)
BR3x6 (x7)
Panel assembly
BR3x6 (x6)
Name plate
LED12A
Key top
Base
Cover
Name plate
Name plate
PS3x8 (x4)
FR6H4466.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 5.2 Shutter



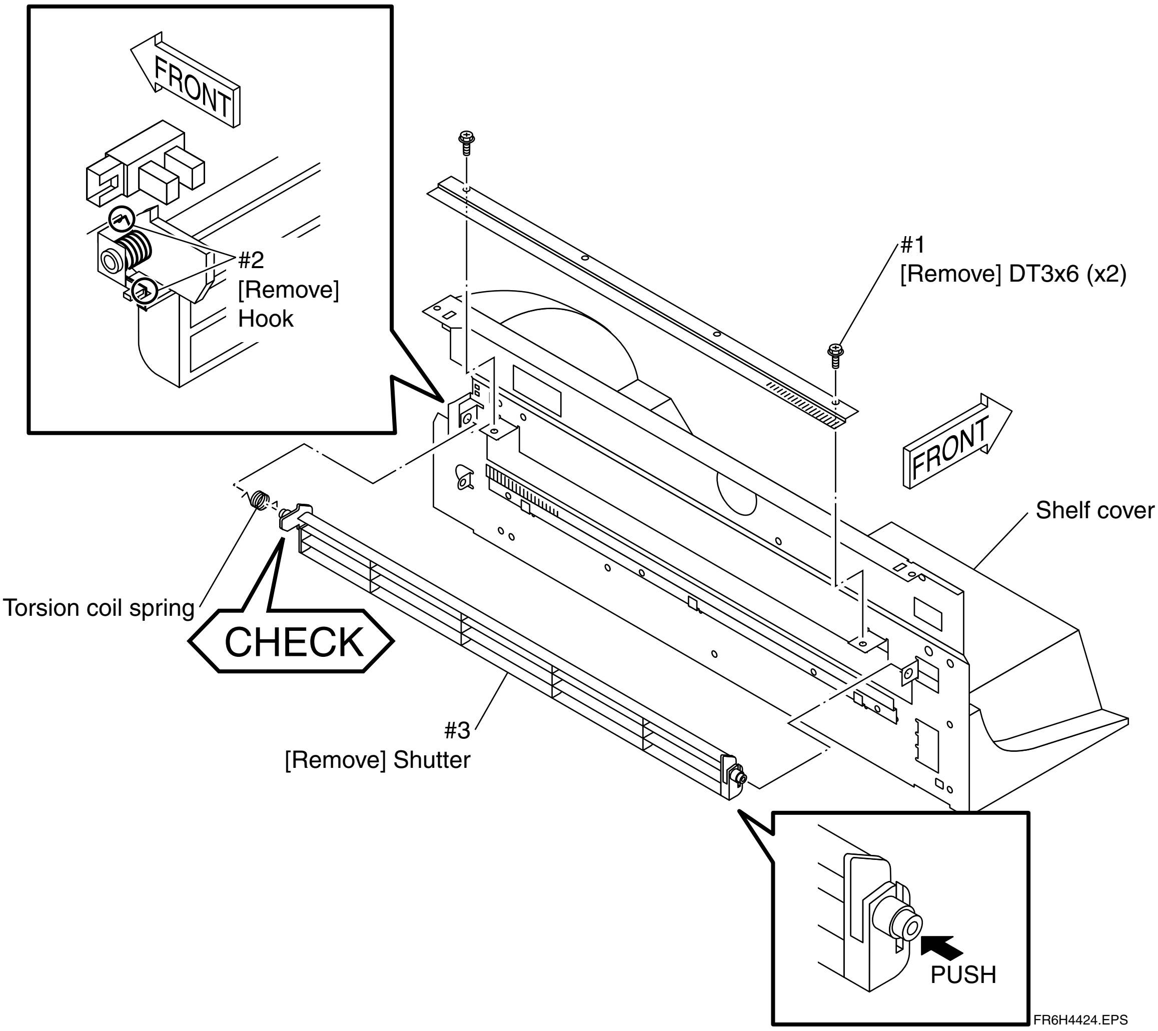
FR6H4469.EPS

### ■ Removal Procedures

(1) Remove the shelf cover assembly.

☞ "5.1 Shelf Cover Assembly"

(2) Remove the shutter.


FRONT
#2
[Remove]
Hook
#1
[Remove] DT3x6 (x2)
FRONT
Shelf cover
Torsion coil spring
CHECK
#3
[Remove] Shutter
PUSH

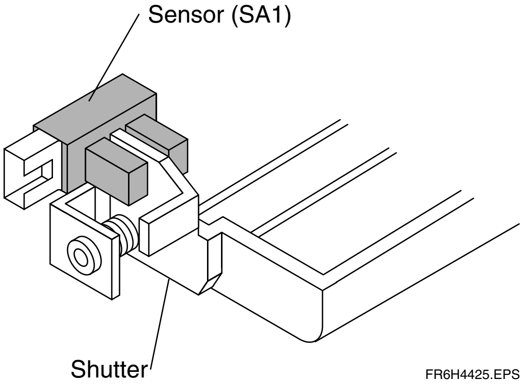
FR6H4424.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

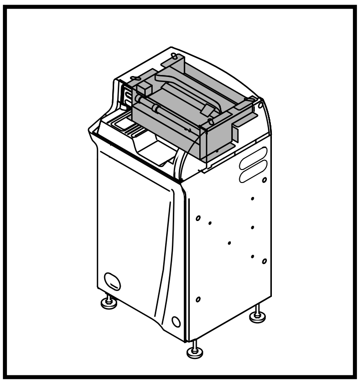
## ■ Check/Adjustment Procedures

- Make sure that the sensor (SA1) and shutter do not interfere with each other.



FR6H4425.EPS

## 5.3 Cassette Set Unit



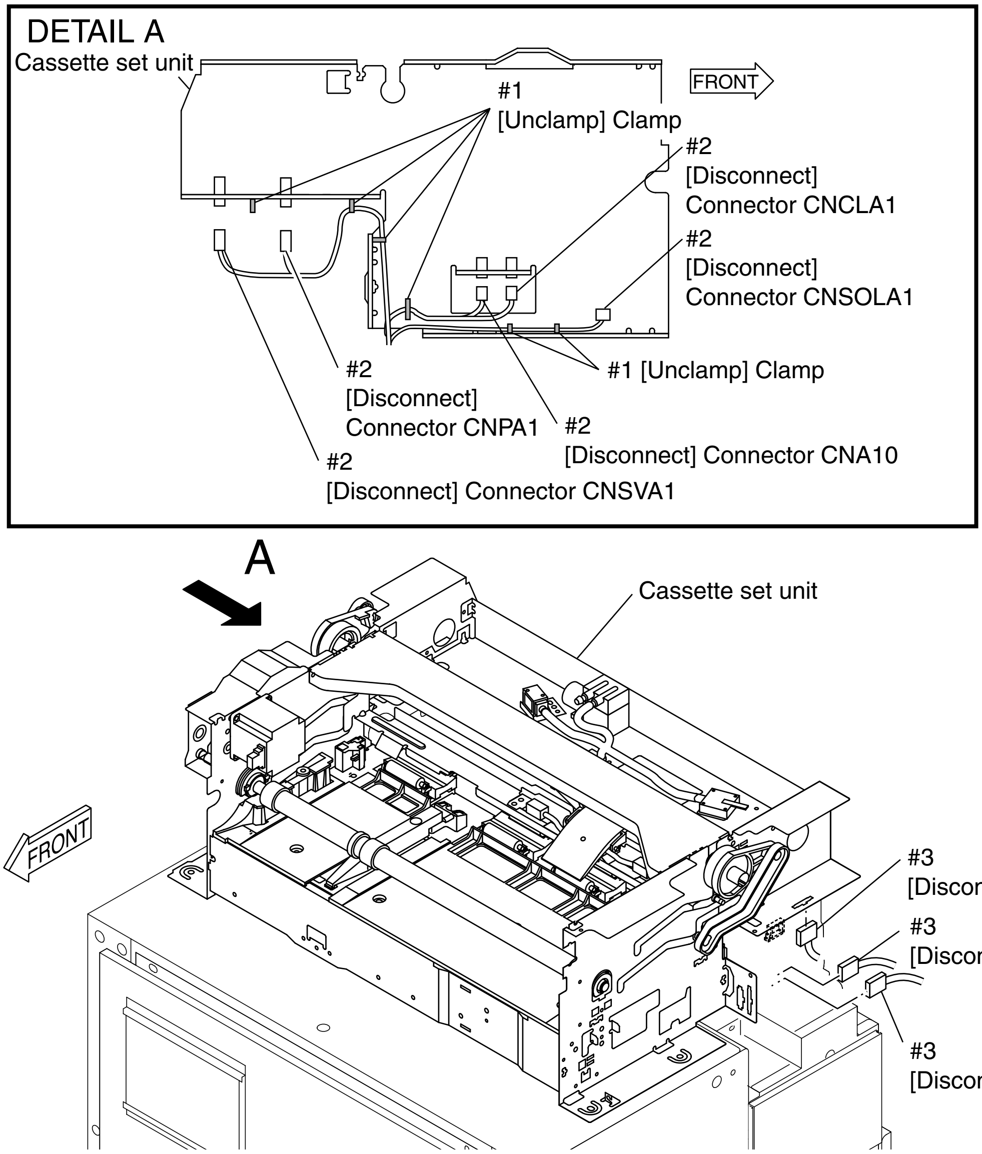
FR6H4443.EPS

### ■ Removal Procedures

(1) Remove the shelf cover assembly.

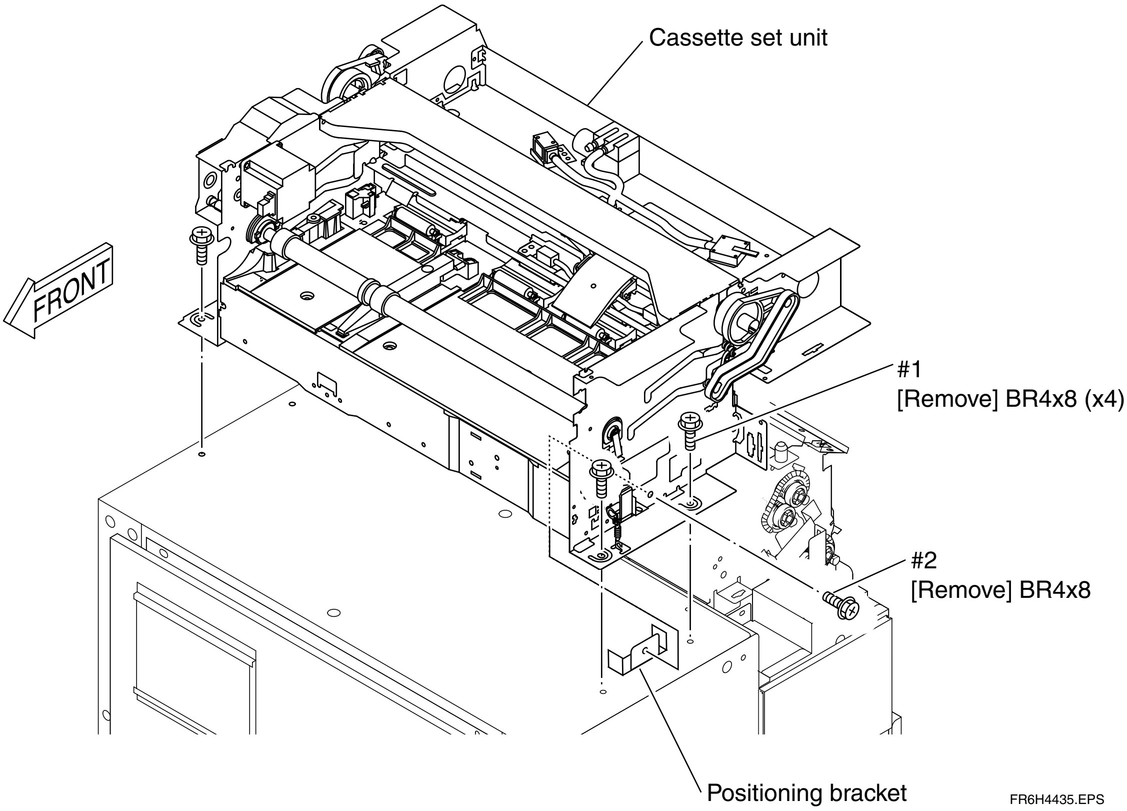
☞ “5.1 Shelf Cover Assembly”

(2) Disconnect the connectors.


DETAIL A
Cassette set unit
FRONT
#1
[Unclamp] Clamp
#2
[Disconnect]
Connector CNCLA1
#2
[Disconnect]
Connector CNSOLA1
#1 [Unclamp] Clamp
#2
[Disconnect]
Connector CNPA1
#2
[Disconnect] Connector CNA10
#2
[Disconnect] Connector CNSVA1
A
Cassette set unit
FRONT
#3
[Disconnect] Connector CNA2
#3
[Disconnect] Connector CNA4
#3
[Disconnect] Connector CNA1

FR6H4429.EPS

(3) Remove the cassette set unit.


Cassette set unit
FRONT
#1
[Remove] BR4x8 (x4)
#2
[Remove] BR4x8
Positioning bracket
FR6H4435.EPS

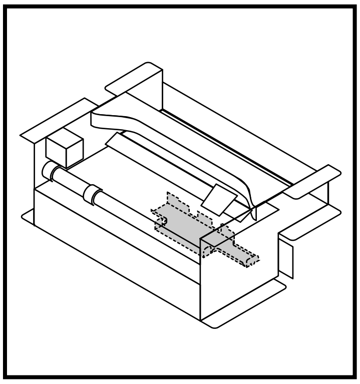
## ■ Reinstallation Procedures

**◆ *INSTRUCTION* ◆**

*When installing the cassette set unit, align the cassette set unit against the positioning bracket to position it as appropriate, and then tighten the screws in reverse order of removal.*

For reinstallation, reverse the removal steps.

## 5.4 Wrong-Insertion Prevention Bracket Assembly



FR6H4464.EPS

### ■ Removal Procedures

(1) Remove the cassette set unit.

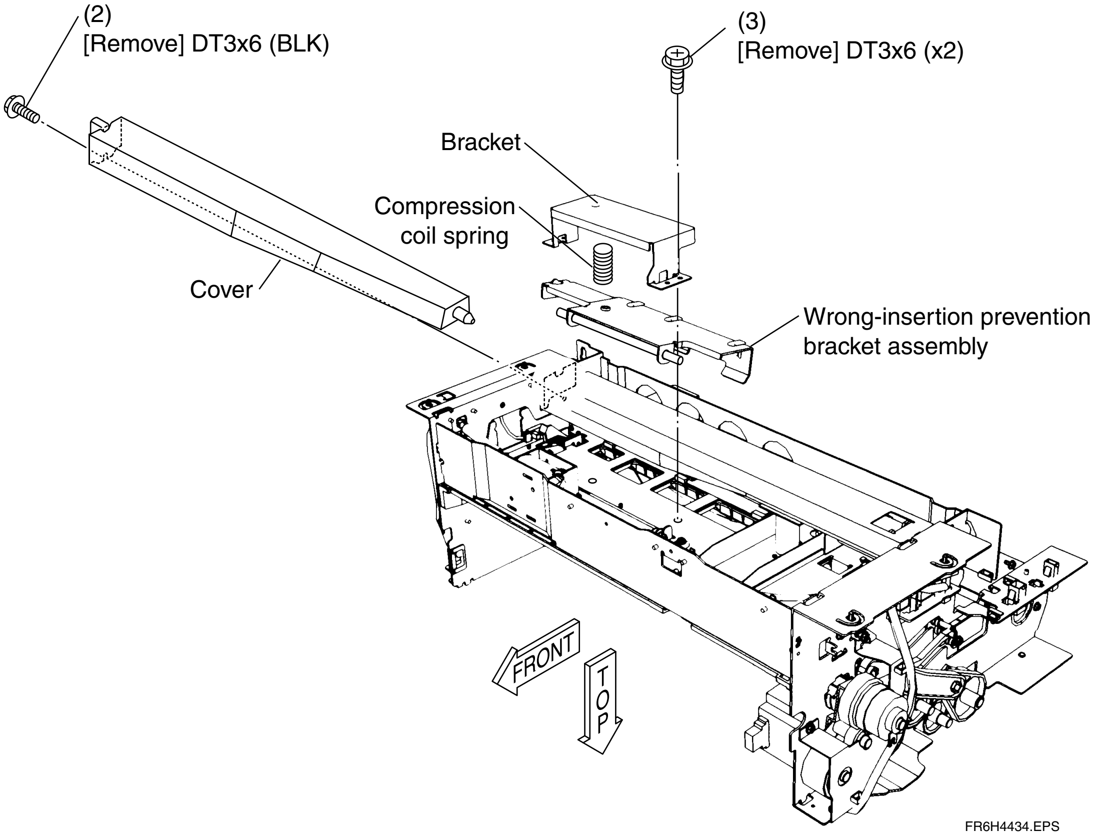
☞ “5.3 Cassette Set Unit”

**◆ *INSTRUCTION* ◆**

*To remove the wrong-insertion prevention bracket assembly, access it from behind the cassette set unit.*

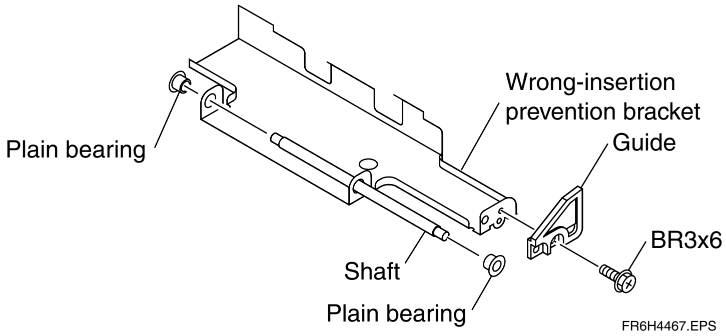
(2) Remove the cover.

(3) Remove the wrong-insertion prevention bracket assembly.


(2)
[Remove] DT3x6 (BLK)
(3)
[Remove] DT3x6 (x2)
Bracket
Compression coil spring
Cover
Wrong-insertion prevention bracket assembly
FRONT
TOP

FR6H4434.EPS

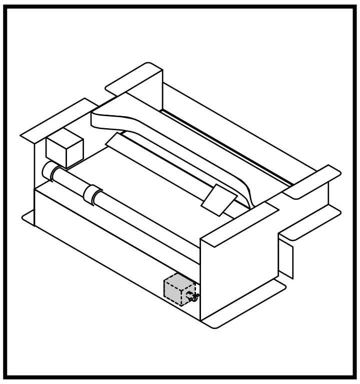
## ■ Exploded View


Plain bearing
Wrong-insertion prevention bracket
Guide
BR3x6
Shaft
Plain bearing
FR6H4467.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 5.5 Solenoid (SolA1)



FR6H4462.EPS

## ■ Removal Procedures

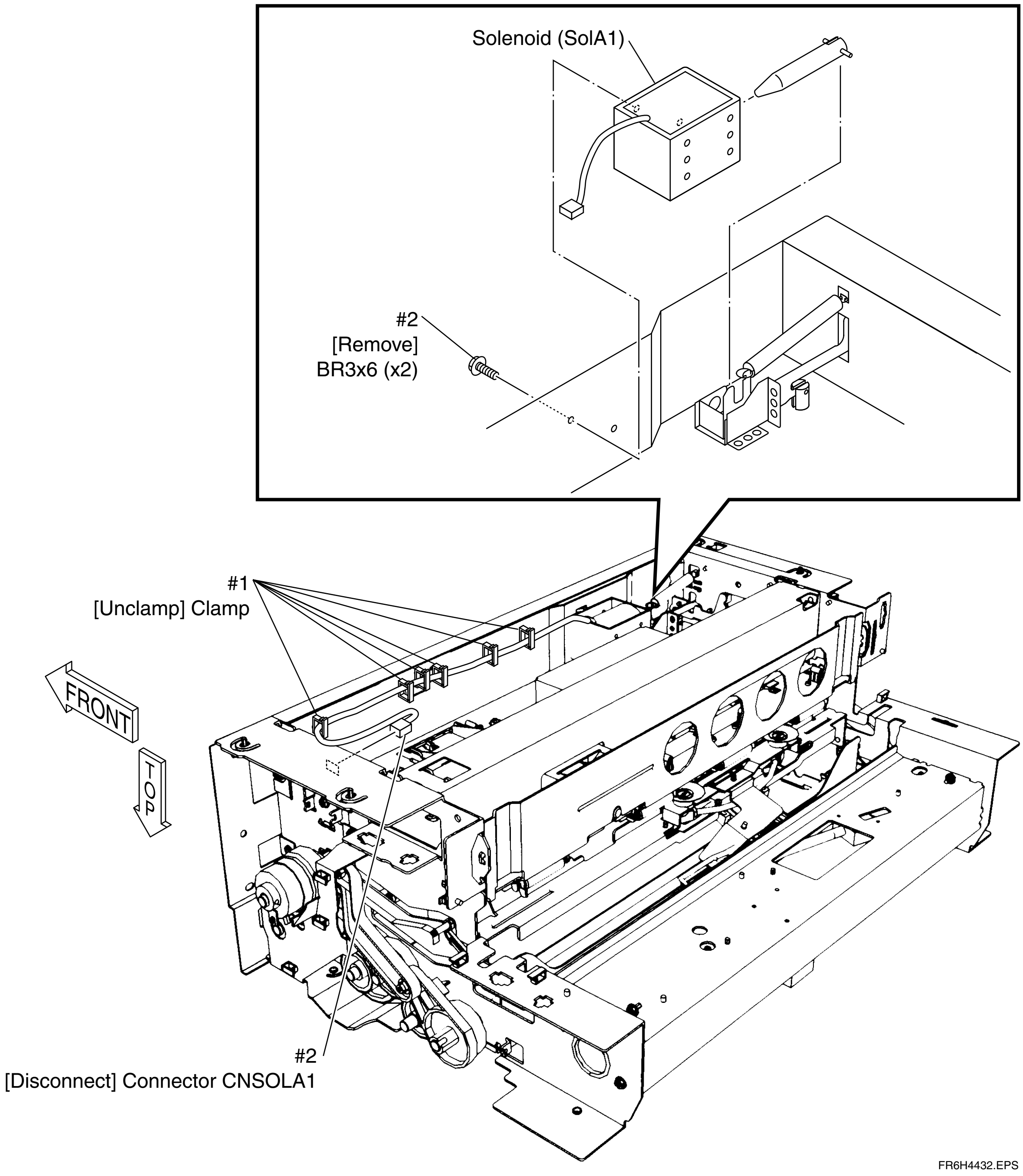
(1) Remove the cassette set unit.

☞ “5.3 Cassette Set Unit”

**◆ *NOTE* ◆**

*To remove the solenoid (SolA1), access it from behind the cassette set unit.*

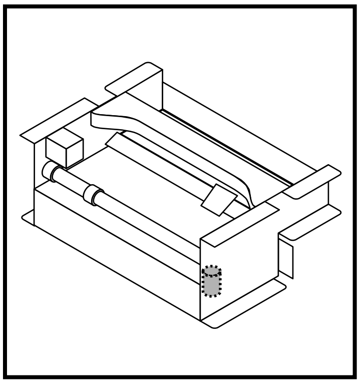
(2) Remove the solenoid (SolA1).


Solenoid (SolA1)
#2
[Remove]
BR3x6 (x2)
#1
[Unclamp] Clamp
FRONT
TOP
#2
[Disconnect] Connector CNSOLA1
FR6H4432.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 5.6 Hold Pin



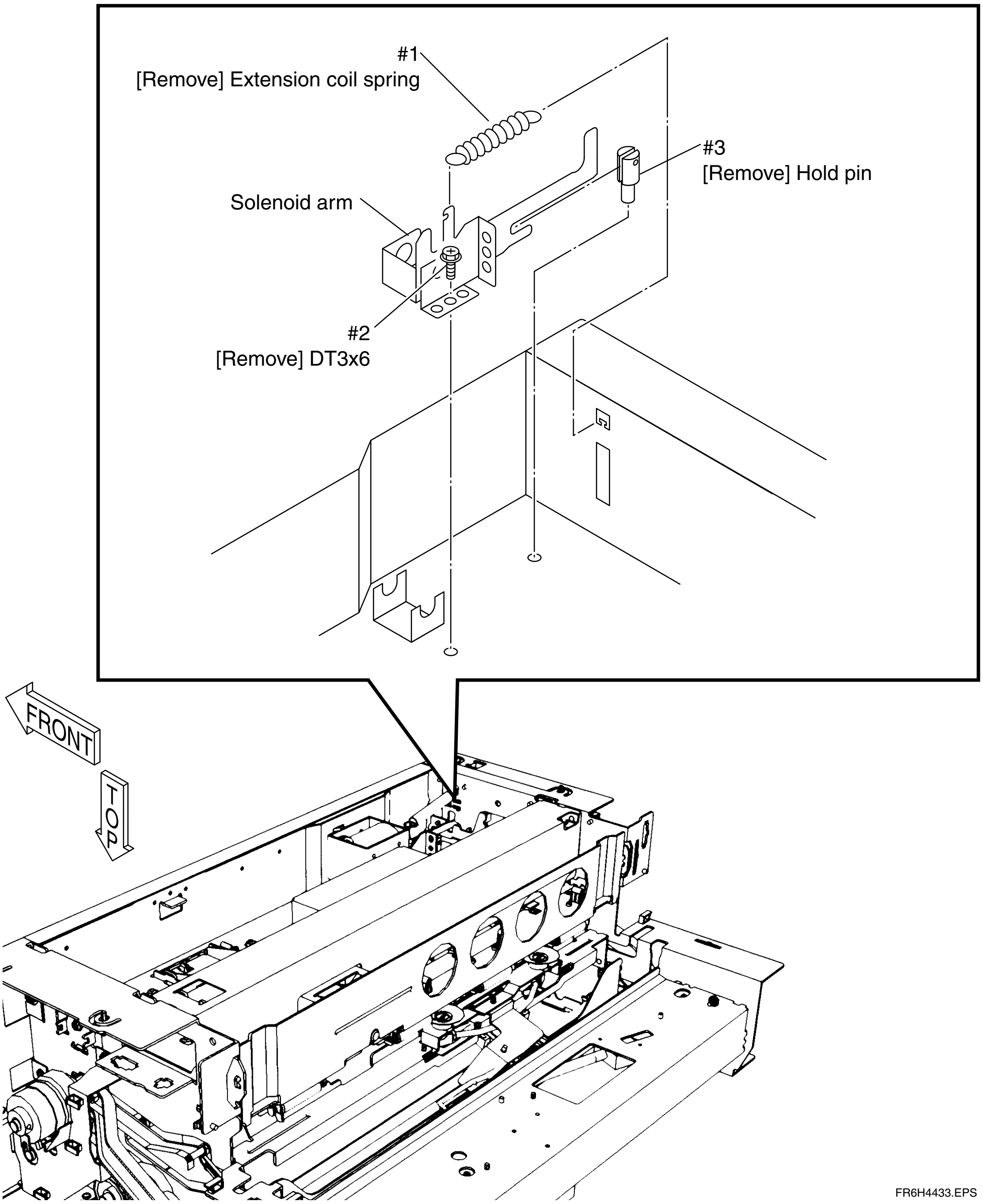
FR6H4463.EPS

### ■ Removal Procedures

(1) Remove the solenoid (SolA1).

☞ “5.5 Solenoid (SolA1)”

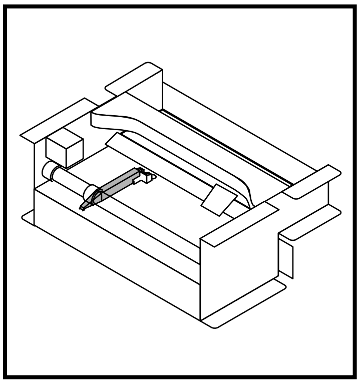
(2) Remove the hold pin.


#1
[Remove] Extension coil spring
#3
[Remove] Hold pin
Solenoid arm
#2
[Remove] DT3x6
FRONT
TOP
FR6H4433.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 5.7 Inch/Metric Changeover Guide



FR6H4455.EPS

## ■ Removal Procedures

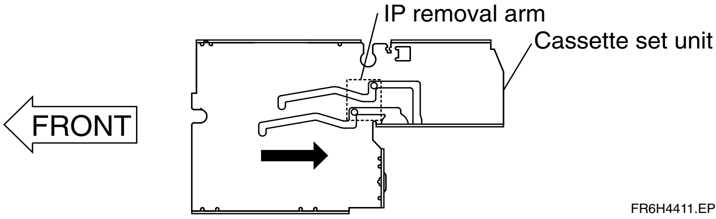
(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ “3.1 Removing and Reinstalling the Covers”

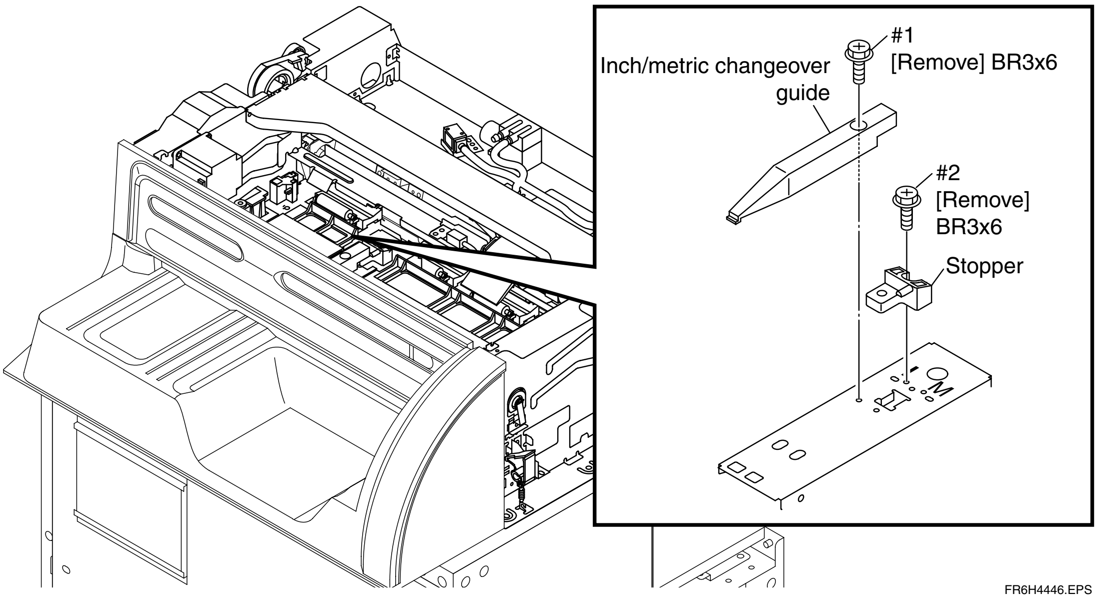
◆ ***NOTE*** ◆

*Move the IP removal arm to its home position before performing the procedures.*


IP removal arm
Cassette set unit
FRONT

FR6H4411.EPS

(2) Remove the inch/metric changeover guide.

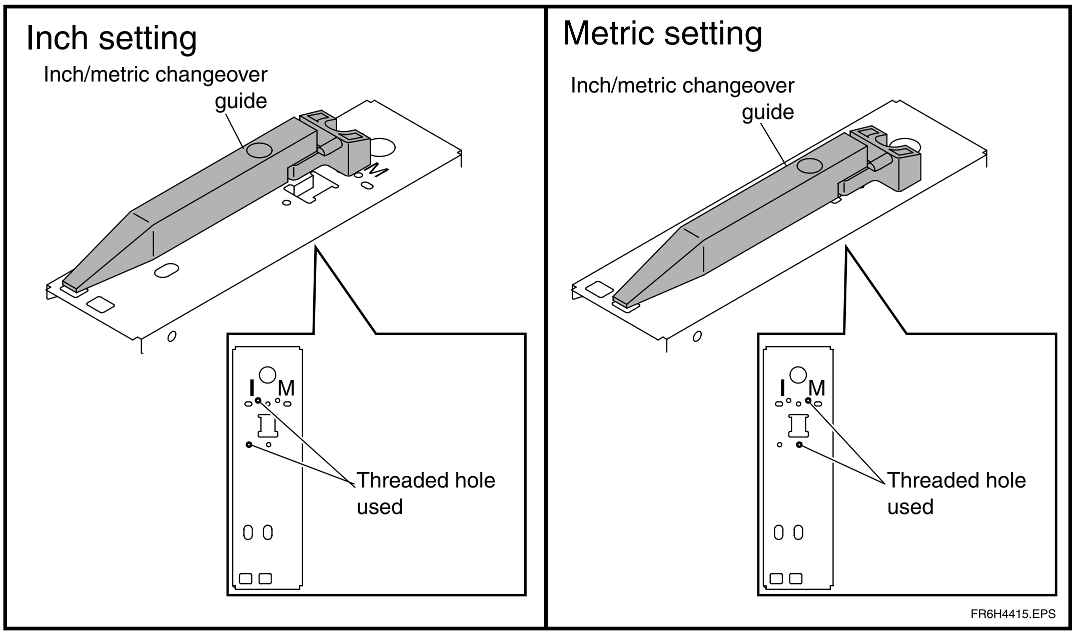

Inch/metric changeover guide
#1
[Remove] BR3x6
#2
[Remove]
BR3x6
Stopper
I
M

FR6H4446.EPS

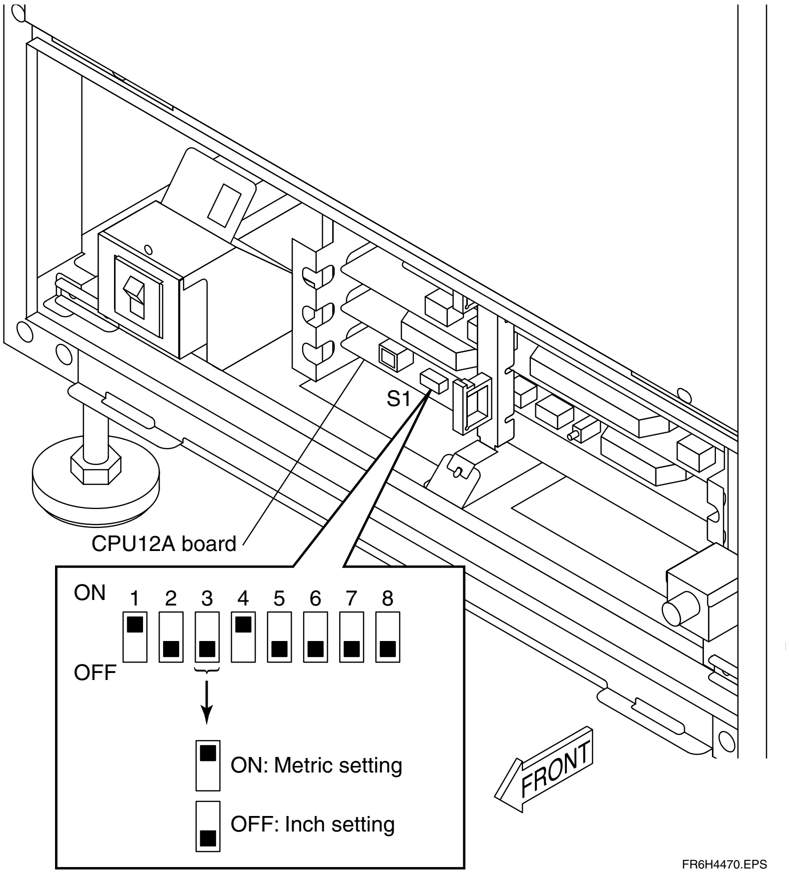
## ■ Reinstallation Procedures

### ◆ *INSTRUCTIONS* ◆

- *The changeover guide mounting location differs depending on whether the inch or metric setting is used. Install the inch/metric changeover guide as instructed in the illustration below according to the setting selected.*

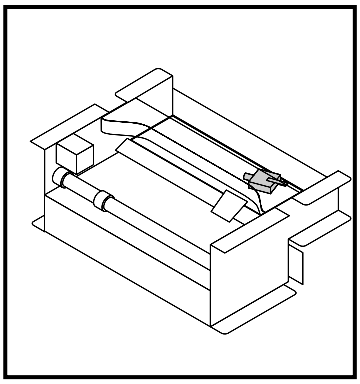

Inch setting
Inch/metric changeover guide
I
M
Threaded hole used
Metric setting
Inch/metric changeover guide
I
M
Threaded hole used
FR6H4415.EPS

- *Set the DIP switches on the CPU12A board as appropriate.*


S1
CPU12A board
ON
1
2
3
4
5
6
7
8
OFF
ON: Metric setting
OFF: Inch setting
FRONT
FR6H4470.EPS

For reinstallation, reverse the removal steps.

# 5.8 Suction Sensor (SA5)



FR6H4465.EPS

## ■ Removal Procedures

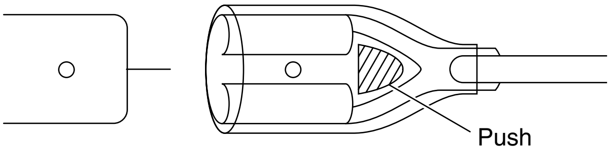
(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ “3.1 Removing and Reinstalling the Covers”

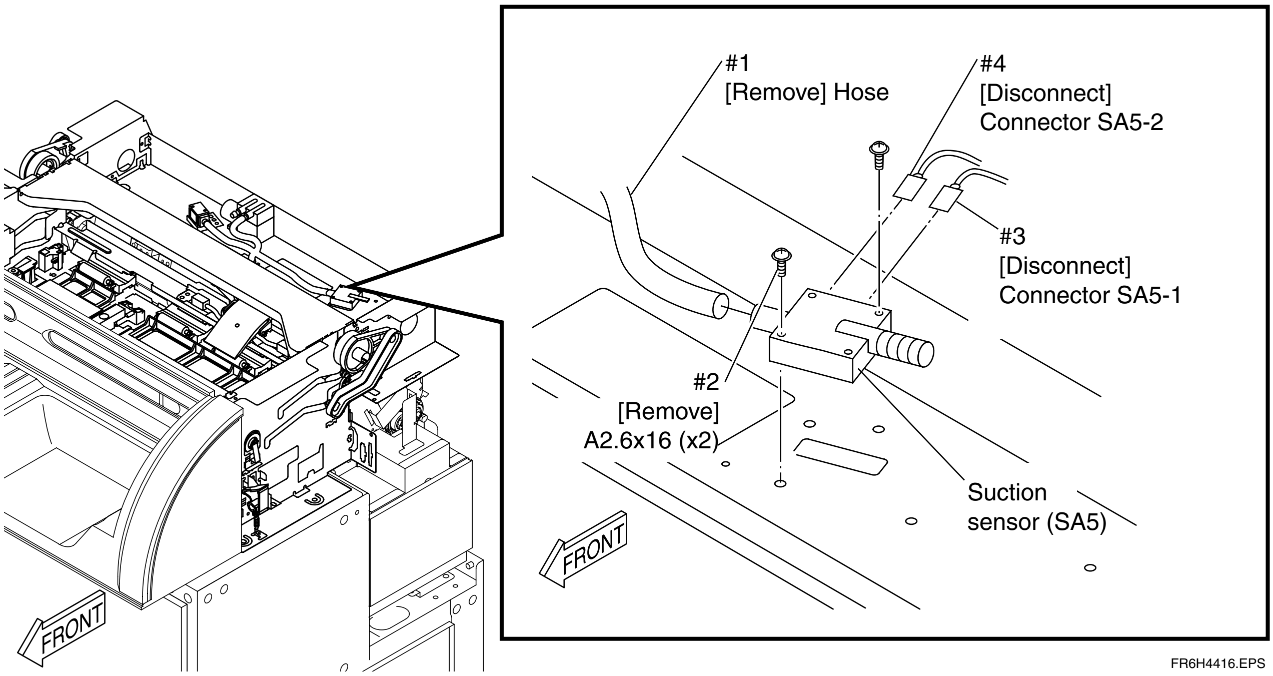
◆ **NOTE** ◆

*To remove the FASTON terminal, push the shaded portion of the terminal illustrated below to detach it.*



FR6H0001.EPS

(2) Remove the suction sensor (SA5).


#1
[Remove] Hose
#4
[Disconnect]
Connector SA5-2
#3
[Disconnect]
Connector SA5-1
#2
[Remove]
A2.6x16 (x2)
Suction
sensor (SA5)
FRONT
FRONT
FR6H4416.EPS

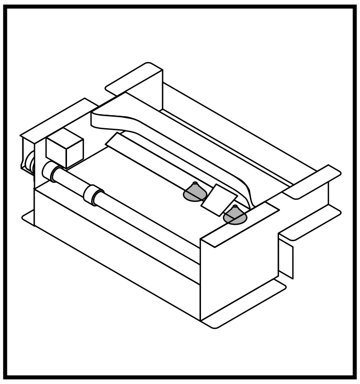
## ■ Reinstallation Procedures

***◆ NOTE ◆***

*To attach the FASTON terminal, insert it all the way to secure it in place.*

For reinstallation, reverse the removal steps.

# 5.9 Suction Cup



FR6H4453.EPS

## ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

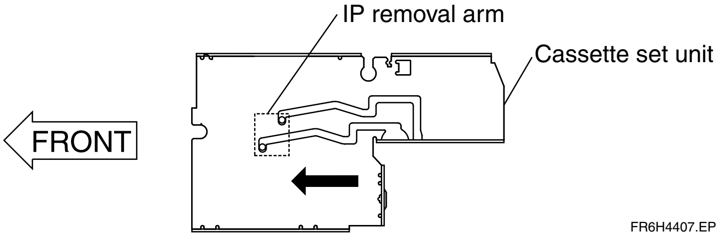
☞ "3.1 Removing and Reinstalling the Covers"

◆ ***INSTRUCTION*** ◆

*When installing or removing the suction cup assembly, perform the procedures while supporting the IP removal arm by hand.*
*If you try to perform the procedures without supporting the IP removal arm, the IP removal arm may be bent.*

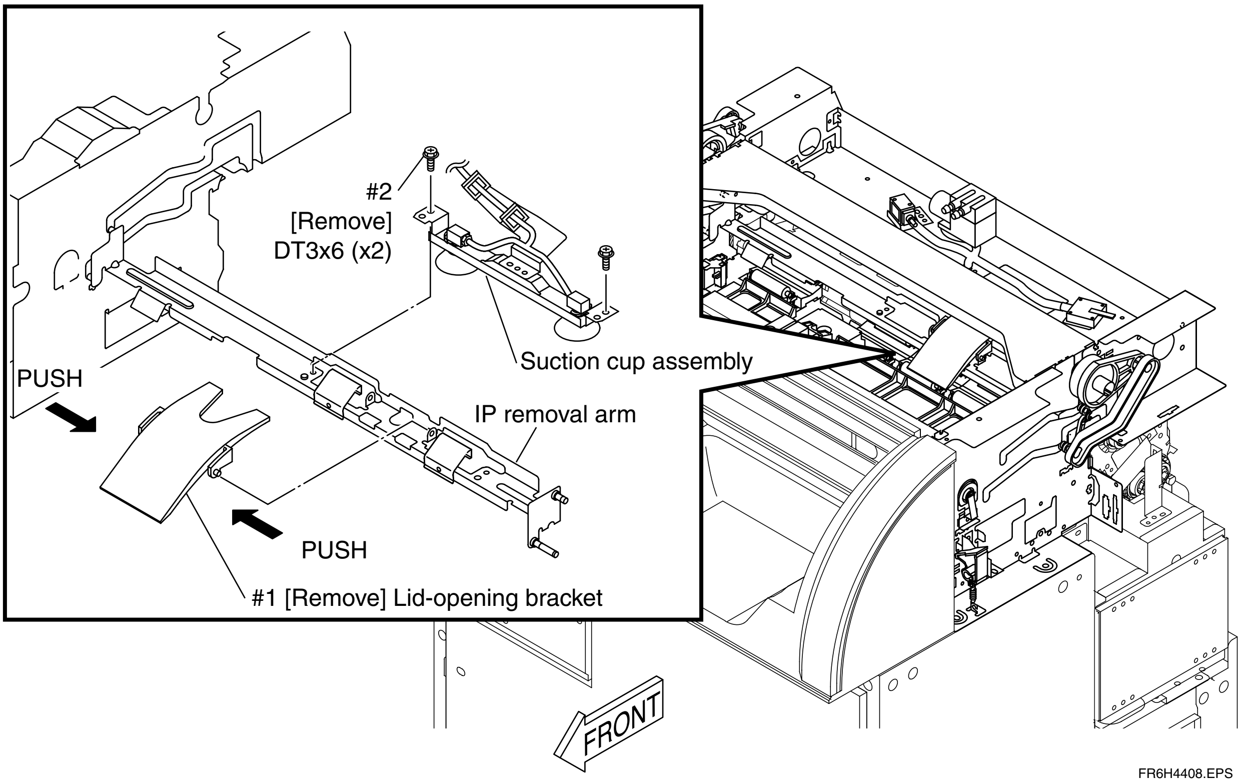
◆ ***NOTE*** ◆

*Move the IP removal arm to its IP suction position before performing the procedures.*

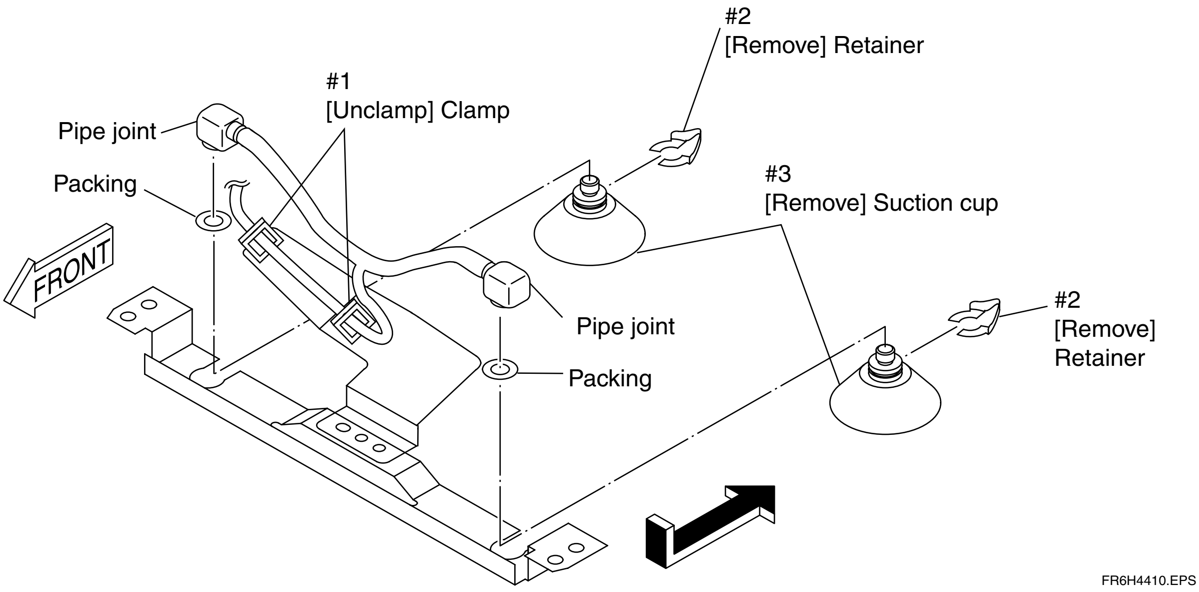


FR6H4407.EPS

(2) Remove the suction cup assembly.

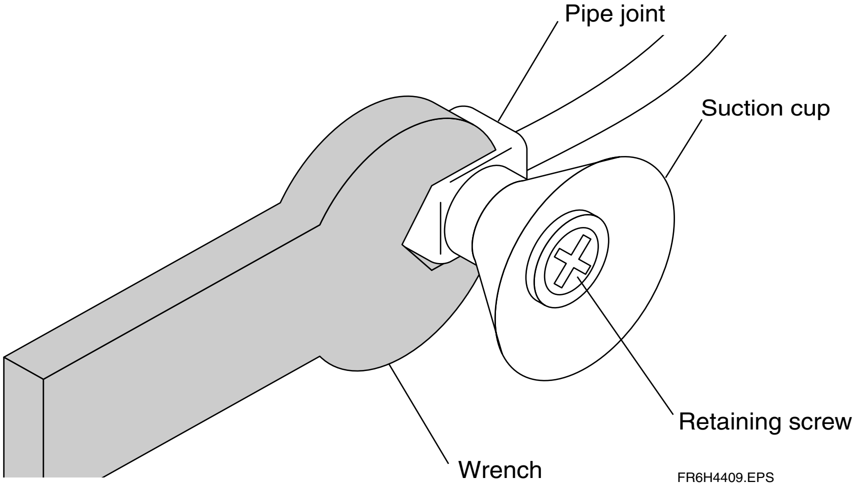

#2
[Remove]
DT3x6 (x2)
Suction cup assembly
PUSH
IP removal arm
PUSH
#1 [Remove] Lid-opening bracket
FRONT
FR6H4408.EPS

(3) Remove the suction cup.


#2
[Remove] Retainer
#1
[Unclamp] Clamp
Pipe joint
Packing
FRONT
#3
[Remove] Suction cup
Pipe joint
Packing
#2
[Remove]
Retainer
FR6H4410.EPS

**◆ NOTE ◆**

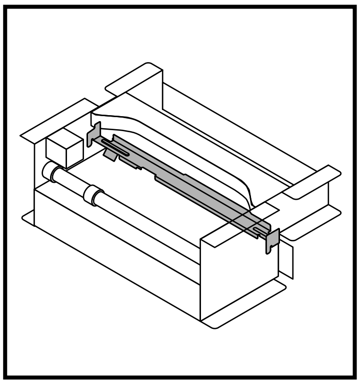
*While keeping the pipe joint in place by use of a wrench or the like, remove the suction cup with a Phillips screwdriver.*


Pipe joint
Suction cup
Retaining screw
Wrench
FR6H4409.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 5.10 IP Removal Arm



FR6H4454.EPS

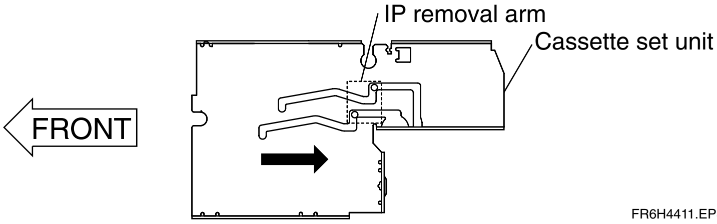
## ■ Removal Procedures

(1) Remove the suction cup assembly.

☞ “5.9 Suction Cup”

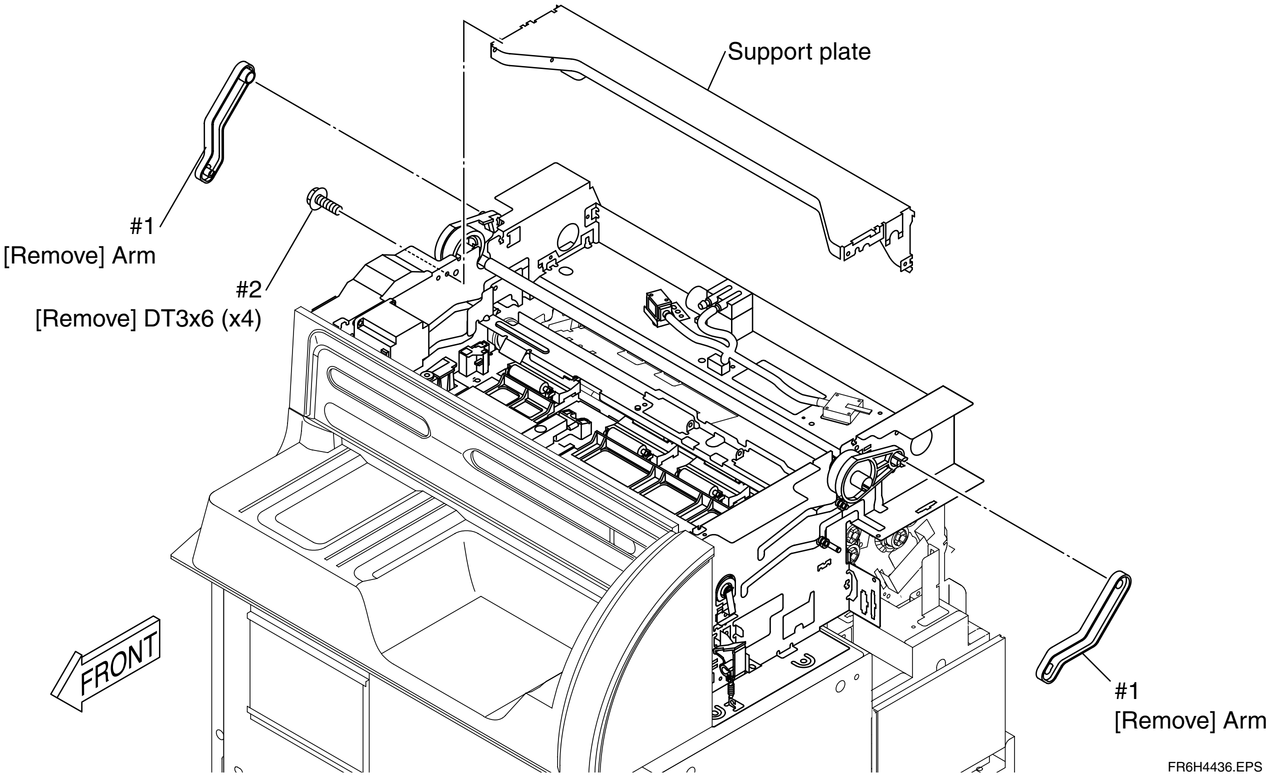
◆ ***NOTE*** ◆

*Move the IP removal arm to its home position before performing the procedures.*

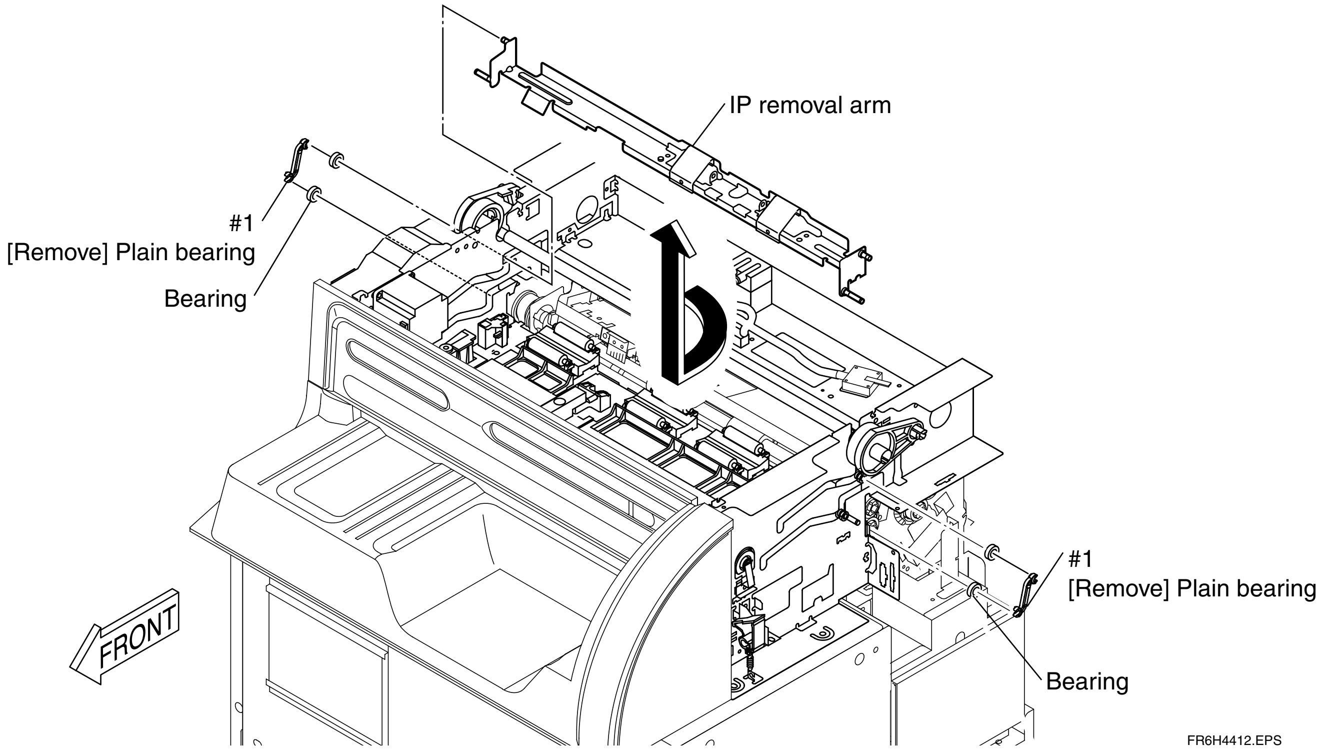

IP removal arm
Cassette set unit
FRONT

FR6H4411.EPS

(2) Remove the support plate.


Support plate
#1
[Remove] Arm
#2
[Remove] DT3x6 (x4)
FRONT
#1
[Remove] Arm
FR6H4436.EPS

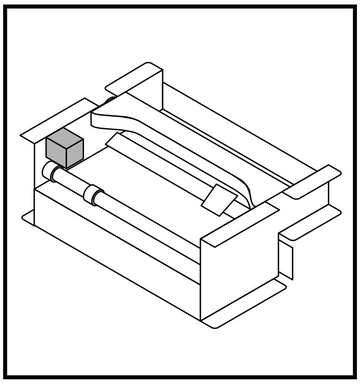
(3) Remove the IP removal arm.


IP removal arm
#1
[Remove] Plain bearing
Bearing
FRONT
#1
[Remove] Plain bearing
Bearing
FR6H4412.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 5.11 Motor (MA1)



FR6H4451.EPS

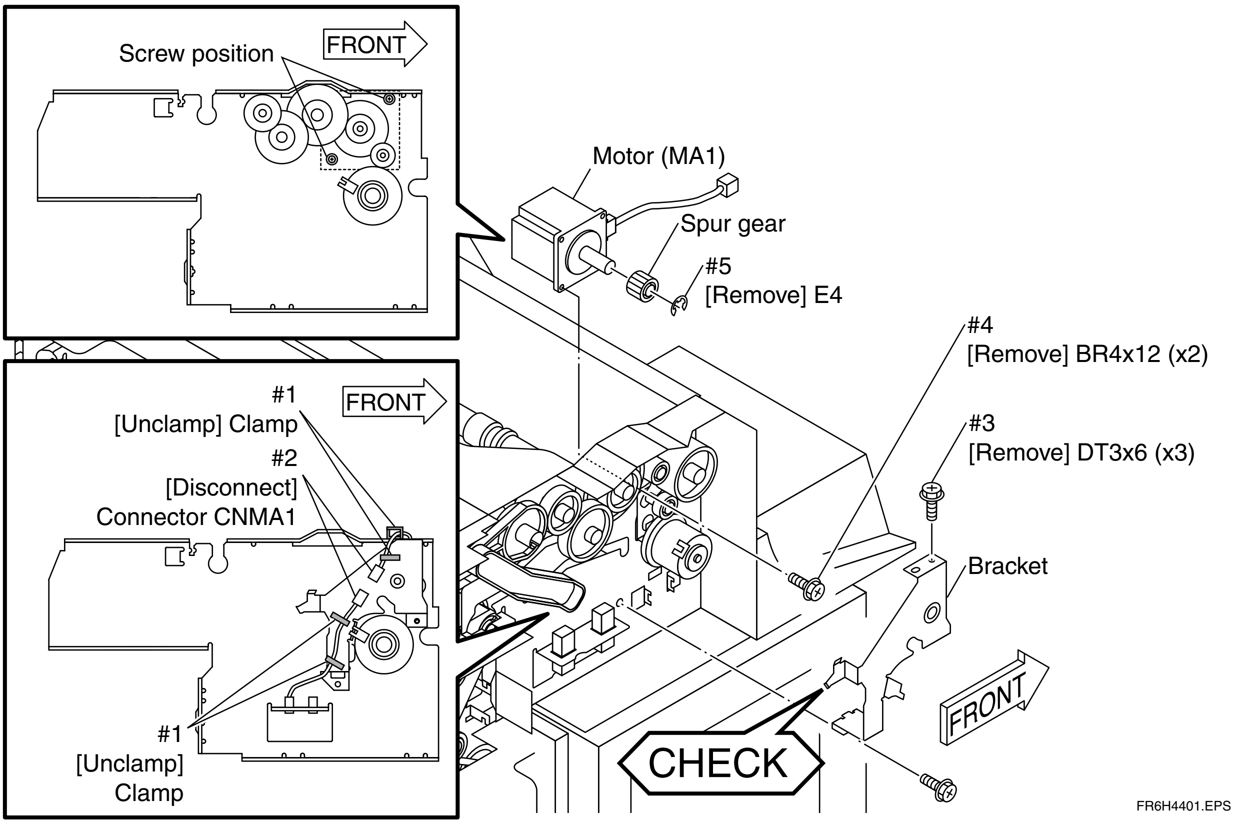
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the motor (MA1).

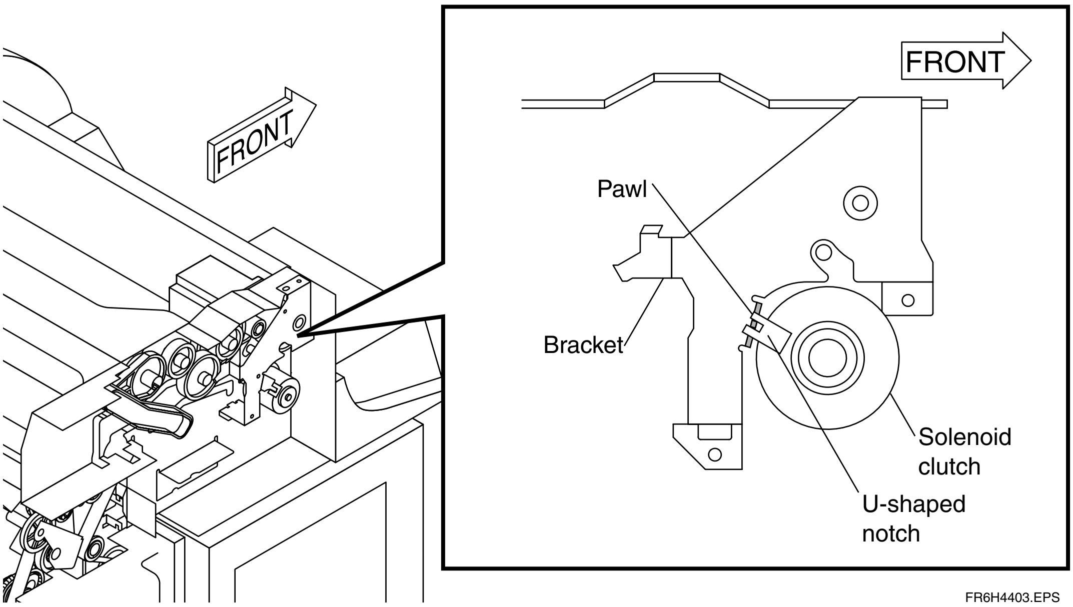

Screw position
FRONT
Motor (MA1)
Spur gear
#5
[Remove] E4
#4
[Remove] BR4x12 (x2)
#3
[Remove] DT3x6 (x3)
Bracket
#1
[Unclamp] Clamp
FRONT
#2
[Disconnect]
Connector CNMA1
#1
[Unclamp]
Clamp
CHECK
FRONT

FR6H4401.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

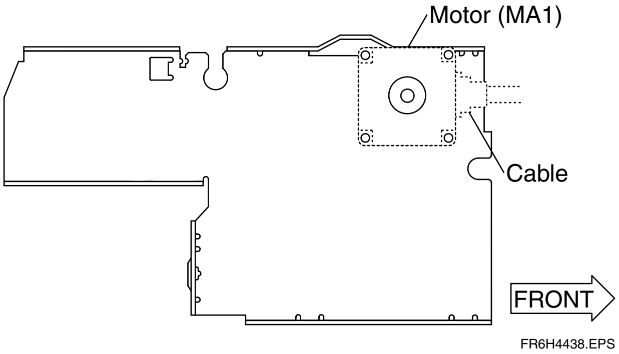
*When attaching the bracket, make sure that the pawl of the bracket is engaged into the U-shaped notch of the solenoid clutch.*


FRONT
FRONT
Pawl
Bracket
Solenoid clutch
U-shaped notch
FR6H4403.EPS

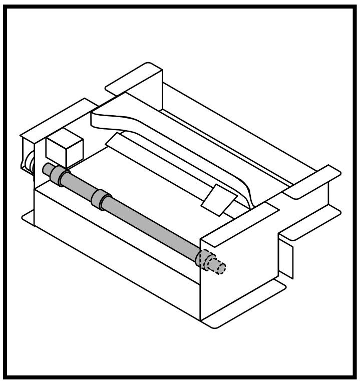
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the pawl of the bracket is engaged into the U-shaped notch of the solenoid clutch.
- Make sure that the motor (MA1) is installed in its correct orientation.


Motor (MA1)
Cable
FRONT
FR6H4438.EPS

# 5.12 Roller



FR6H4452.EPS

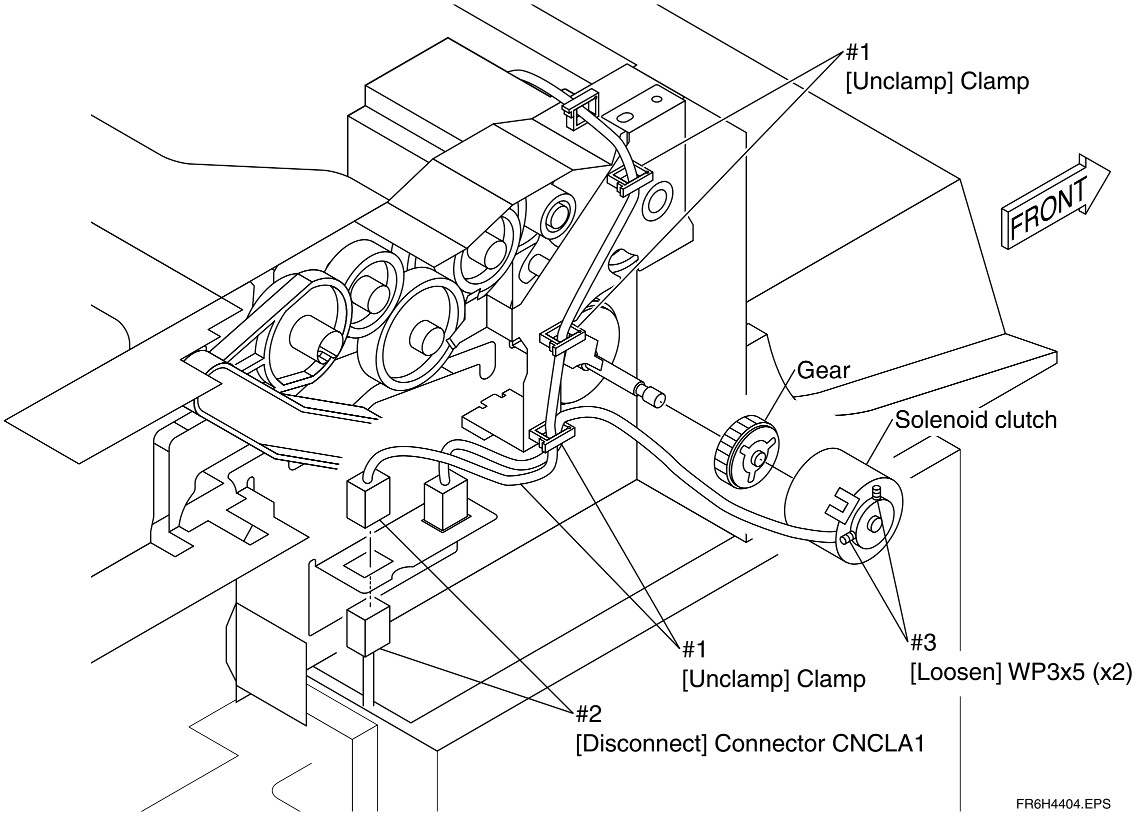
## ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

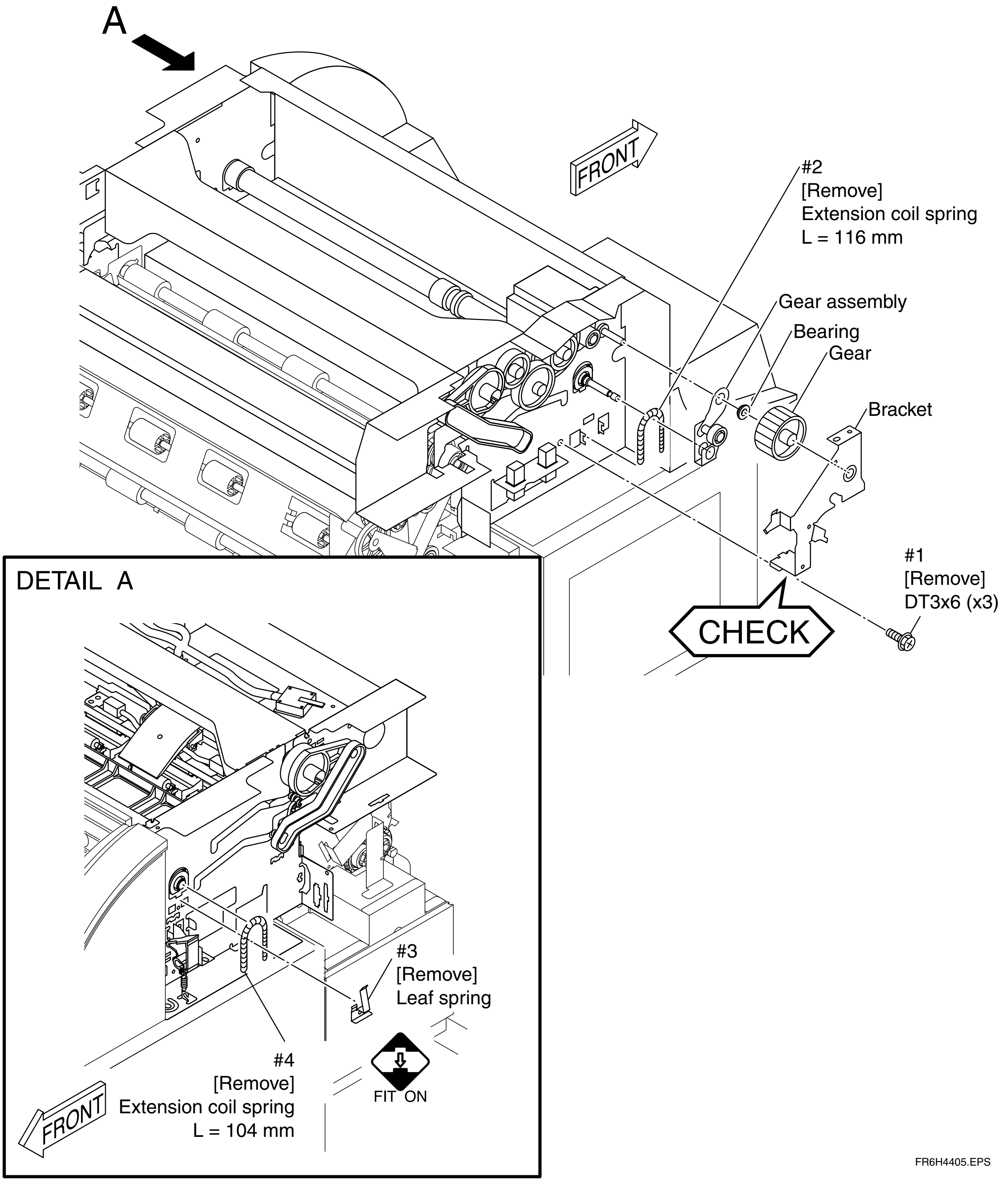
☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the solenoid clutch.


#1
[Unclamp] Clamp
FRONT
Gear
Solenoid clutch
#1
[Unclamp] Clamp
#3
[Loosen] WP3x5 (x2)
#2
[Disconnect] Connector CNCLA1

FR6H4404.EPS

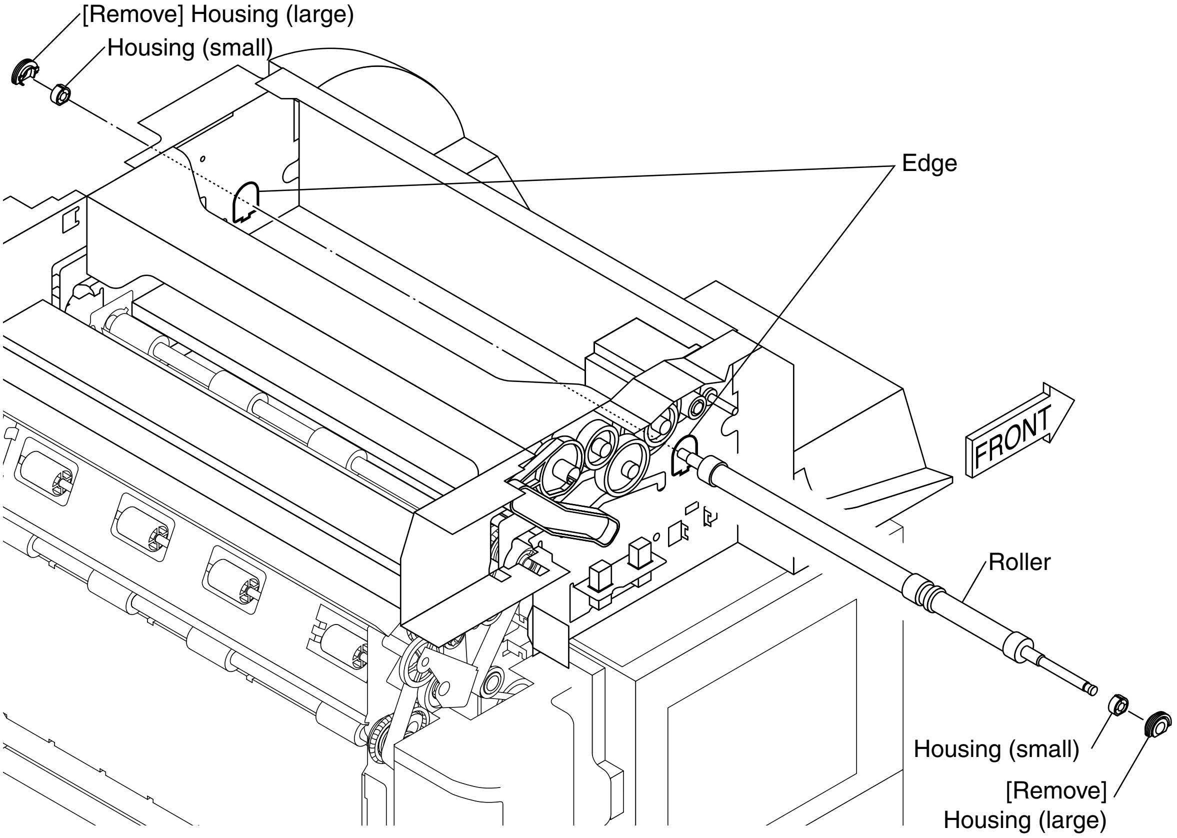
(3) Remove the bracket.


A
FRONT
#2
[Remove]
Extension coil spring
L = 116 mm
Gear assembly
Bearing
Gear
Bracket
#1
[Remove]
DT3x6 (x3)
CHECK
DETAIL A
#3
[Remove]
Leaf spring
#4
[Remove]
Extension coil spring
L = 104 mm
FIT ON
FRONT
FR6H4405.EPS

### ◆ *INSTRUCTION* ◆

*When removing the roller, make sure that the edges of the side plates do not interfere with the roller.*

(4) Remove the roller.


[Remove] Housing (large)
Housing (small)
Edge
FRONT
Roller
Housing (small)
[Remove]
Housing (large)

FR6H4406.EPS

## ■ Reinstallation Procedures

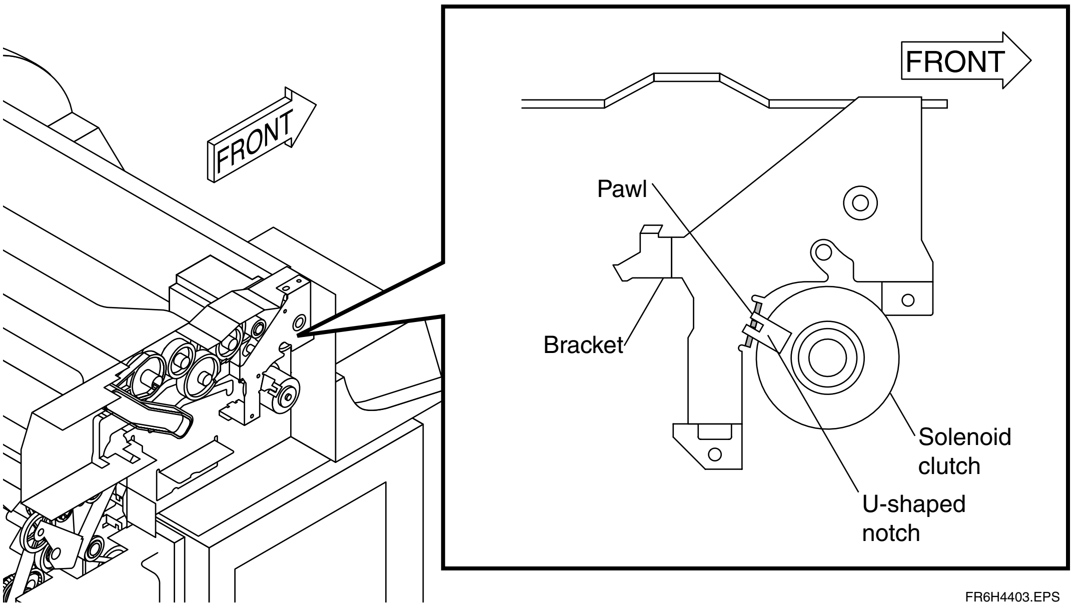
### ◆ *INSTRUCTION* ◆

*The extension coil springs differ in size depending on where they are attached. Use care not to confuse their locations..*

For reinstallation, reverse the removal steps.

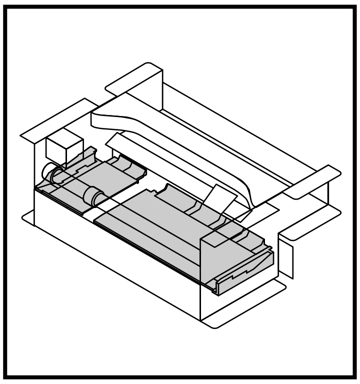
## ■ Check/Adjustment Procedures

- Make sure that the pawl of the bracket is engaged into the U-shaped notch of the solenoid clutch.


FRONT
FRONT
Pawl
Bracket
Solenoid clutch
U-shaped notch

FR6H4403.EPS

## 5.13 Guide Plate



FR6H4459.EPS

### ■ Removal Procedures

**◇ *REFERENCE* ◇**

*When only the guide plate (large) is to be removed, the motor (MA1) need not be removed.*

(1) Remove the shelf cover assembly.

☞ "5.1 Shelf Cover Assembly"

(2) Remove the motor (MA1).

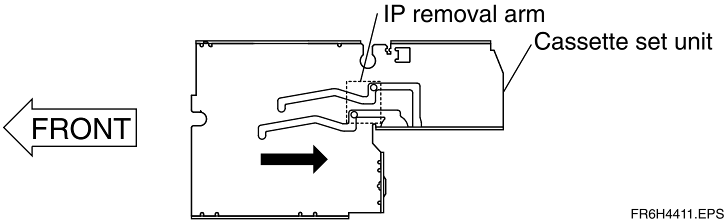
☞ "5.11 Motor (MA1)"

(3) Remove the roller.

☞ "5.12 Roller"

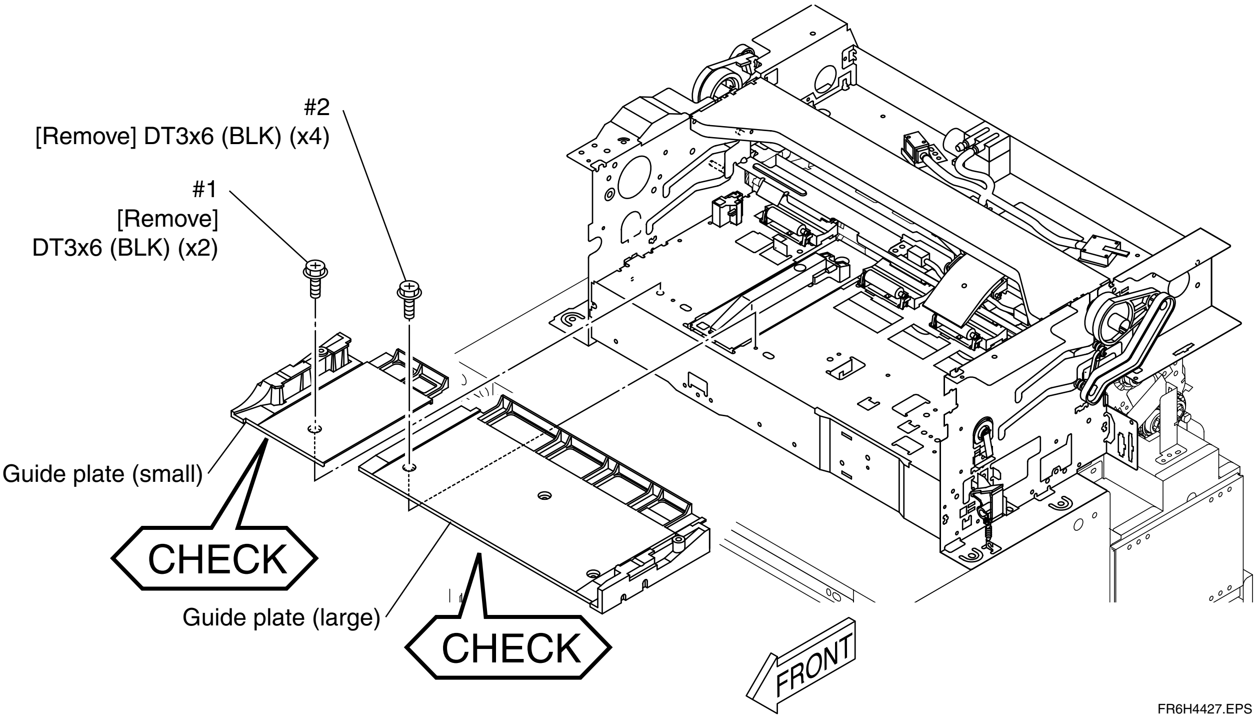
**◆ *NOTE* ◆**

*Move the IP removal arm to its home position before performing the procedures.*



FR6H4411.EPS

(4) Remove the guide plate (large) and guide plate (small).

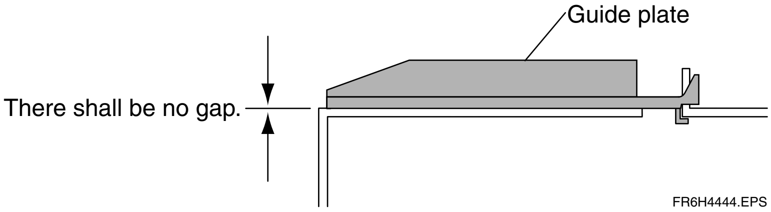

#2
[Remove] DT3x6 (BLK) (x4)
#1
[Remove]
DT3x6 (BLK) (x2)
Guide plate (small)
CHECK
Guide plate (large)
CHECK
FRONT
FR6H4427.EPS

## ■ Reinstallation Procedures

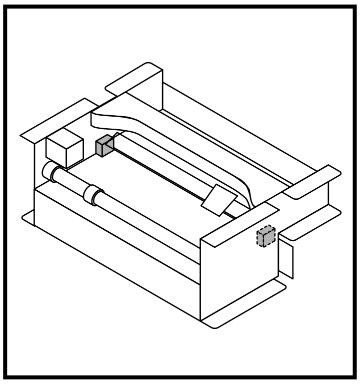
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the guide plate is not lifted.


Guide plate
There shall be no gap.
FR6H4444.EPS

## 5.14 Stopper



FR6H4456.EPS

### ■ Removal Procedures

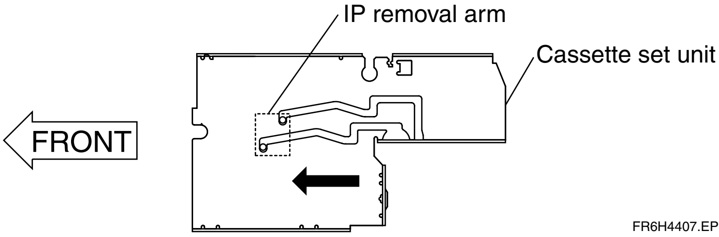
(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ "3.1 Removing and Reinstalling the Covers"

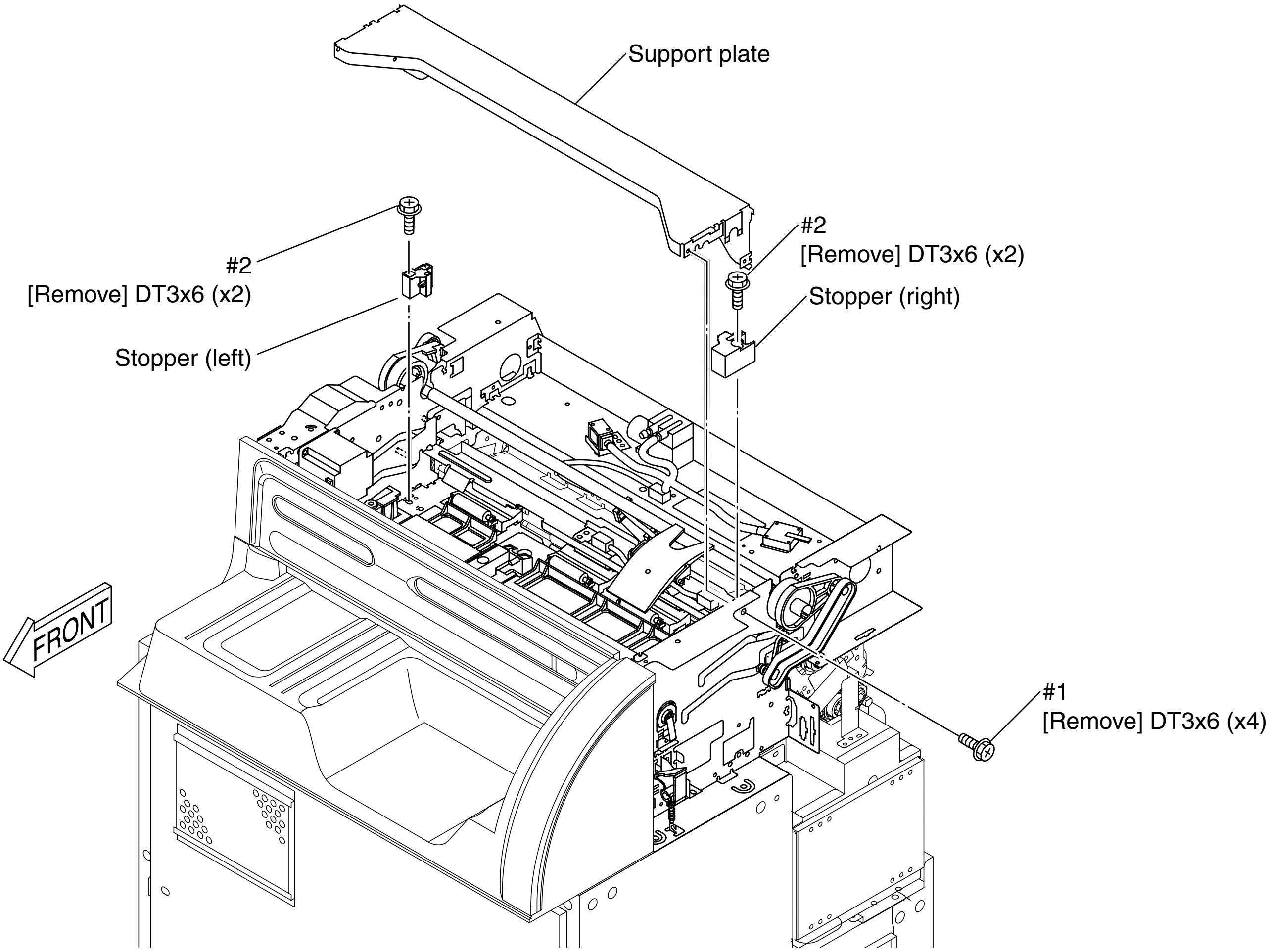
◆ ***NOTE*** ◆

*Move the IP removal arm to its IP suction position before performing the procedures.*


IP removal arm
Cassette set unit
FRONT

FR6H4407.EPS

(2) Remove the stopper (left) and stopper (right).

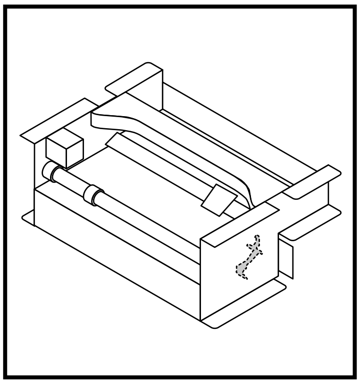

Support plate
#2
[Remove] DT3x6 (x2)
#2
[Remove] DT3x6 (x2)
Stopper (right)
Stopper (left)
FRONT
#1
[Remove] DT3x6 (x4)

FR6H4418.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 5.15 Actuator (Cassette IN Detection)



FR6H4457.EPS

### ■ Removal Procedures

(1) Remove the shelf cover assembly.

☞ “5.1 Shelf Cover Assembly”

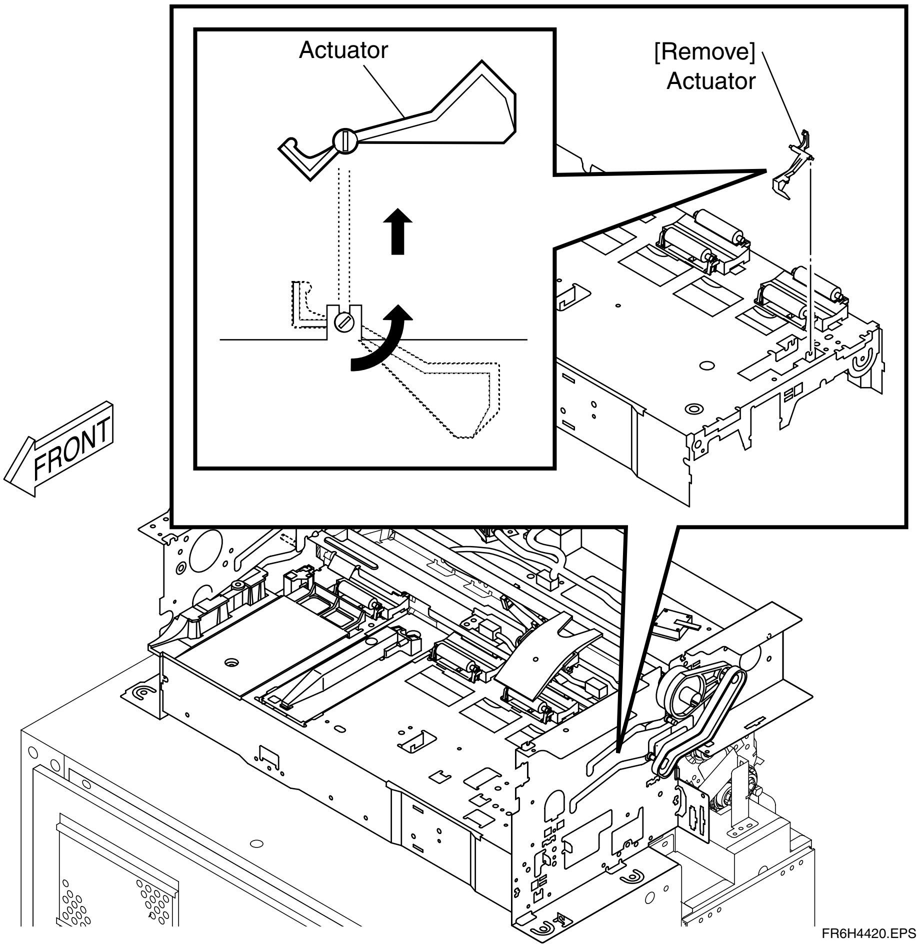
(2) Remove the guide plate (large).

☞ “5.13 Guide Plate”

(3) Remove the stopper (right).

☞ “5.14 Stopper”

(4) Remove the actuator.

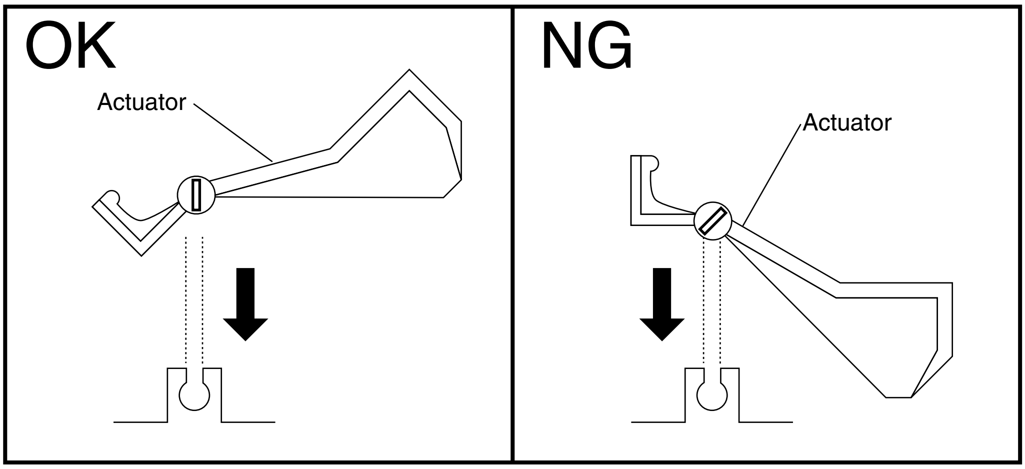


FR6H4420.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

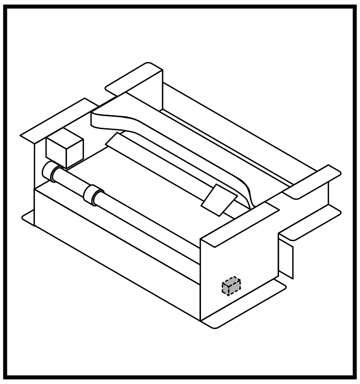
*The actuator should be installed properly.*


OK
Actuator
NG
Actuator

FR6H4421.EPS

For reinstallation, reverse the removal steps.

# 5.16 Sensor (SA2)



FR6H4461.EPS

## ■ Removal Procedures

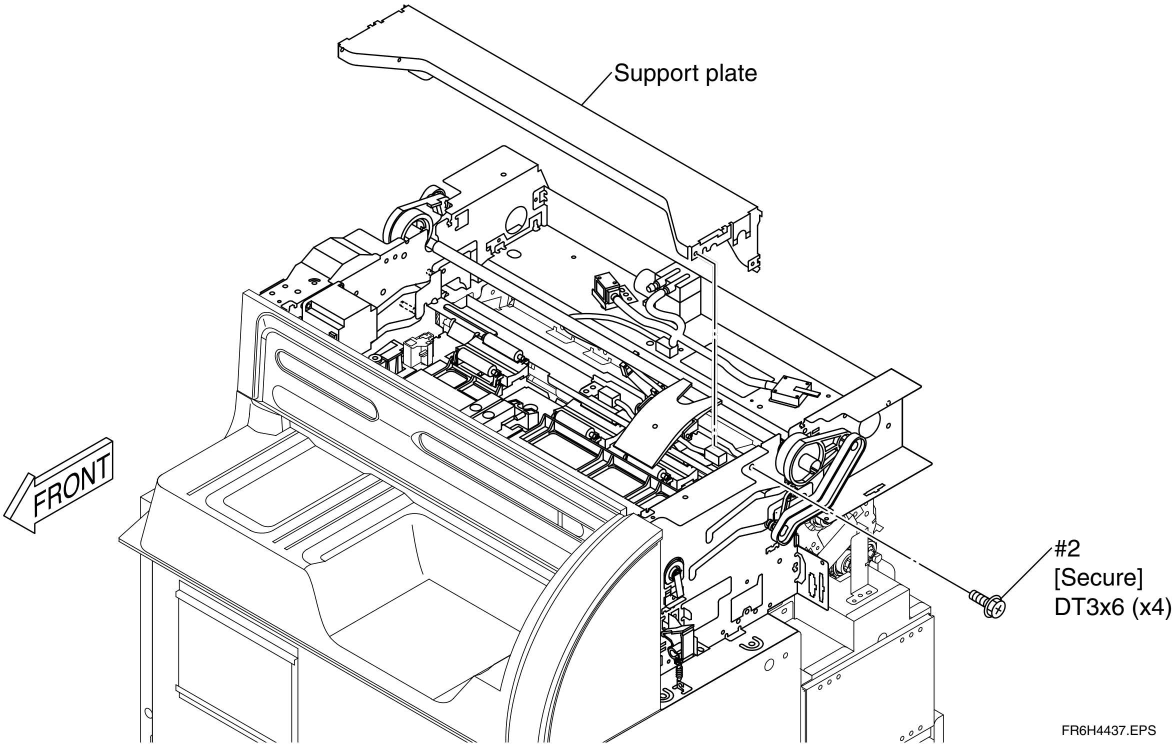
(1) Remove the cassette set unit.

☞ “5.3 Cassette Set Unit”

(2) Remove the actuator (cassette IN detection).

☞ “5.15 Actuator (Cassette IN Detection)”

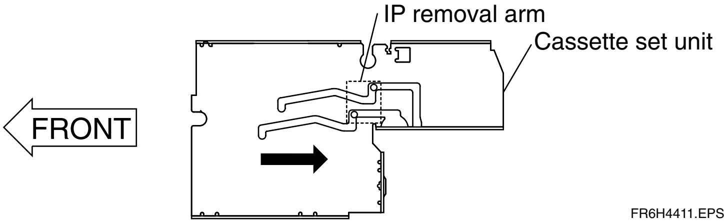
(3) Attach the support plate.


Support plate
FRONT
#2
[Secure]
DT3x6 (x4)

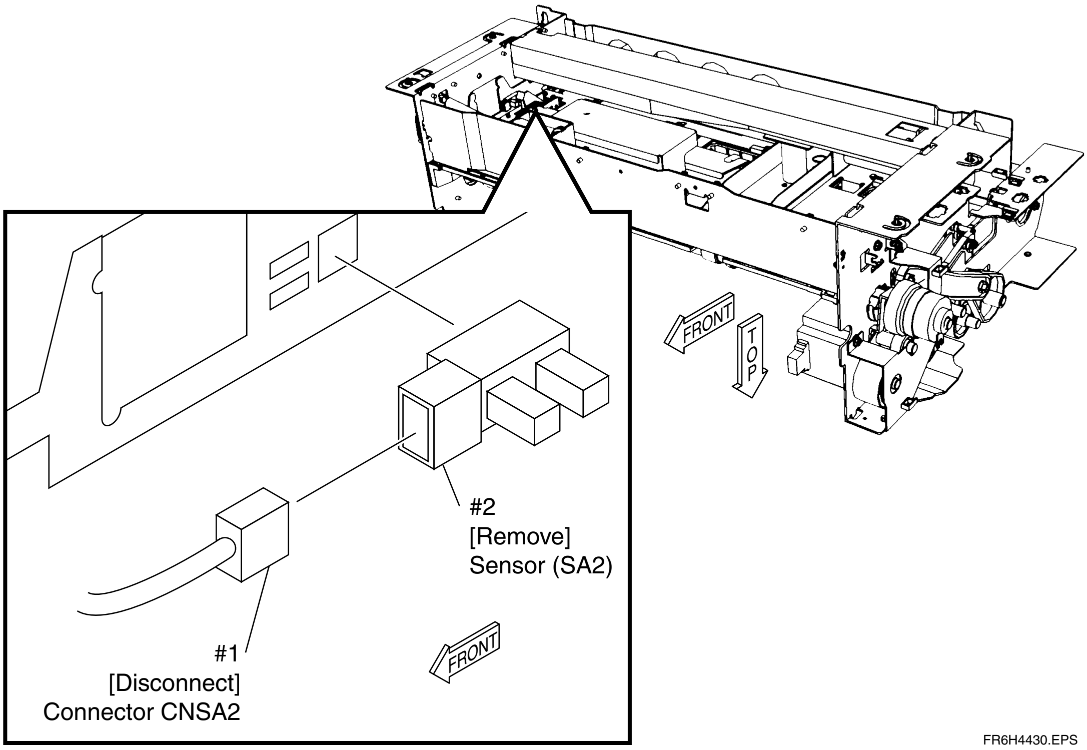
FR6H4437.EPS

**◆ *NOTES* ◆**

- *To remove the sensor (SA2), access it from behind the cassette set unit.*
- *Move the IP removal arm to its home position before performing the procedures.*


IP removal arm
Cassette set unit
FRONT
FR6H4411.EPS

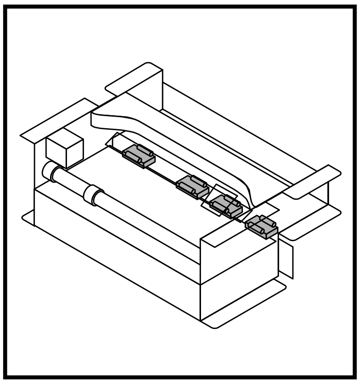
(4) Remove the sensor (SA2).


#2
[Remove]
Sensor (SA2)
#1
[Disconnect]
Connector CNSA2
FRONT
FRONT
TOP
FR6H4430.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 5.17 Roller Assembly



FR6H4458.EPS

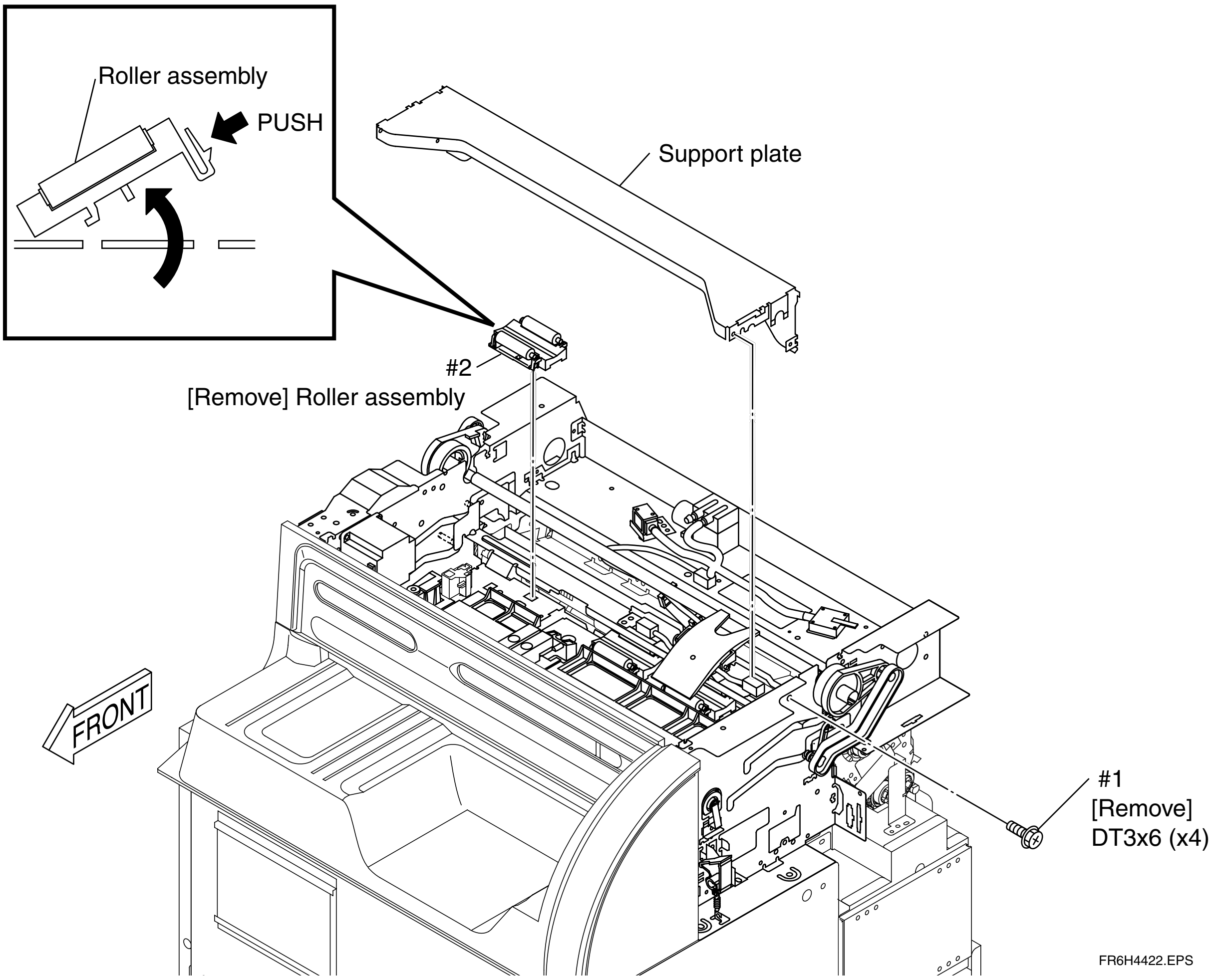
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the roller assembly.

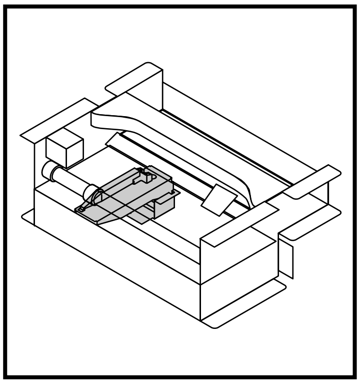

Roller assembly
PUSH
Support plate
#2
[Remove] Roller assembly
FRONT
#1
[Remove]
DT3x6 (x4)

FR6H4422.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 5.18 Movable Guide Assembly



FR6H4460.EPS

### ■ Removal Procedures

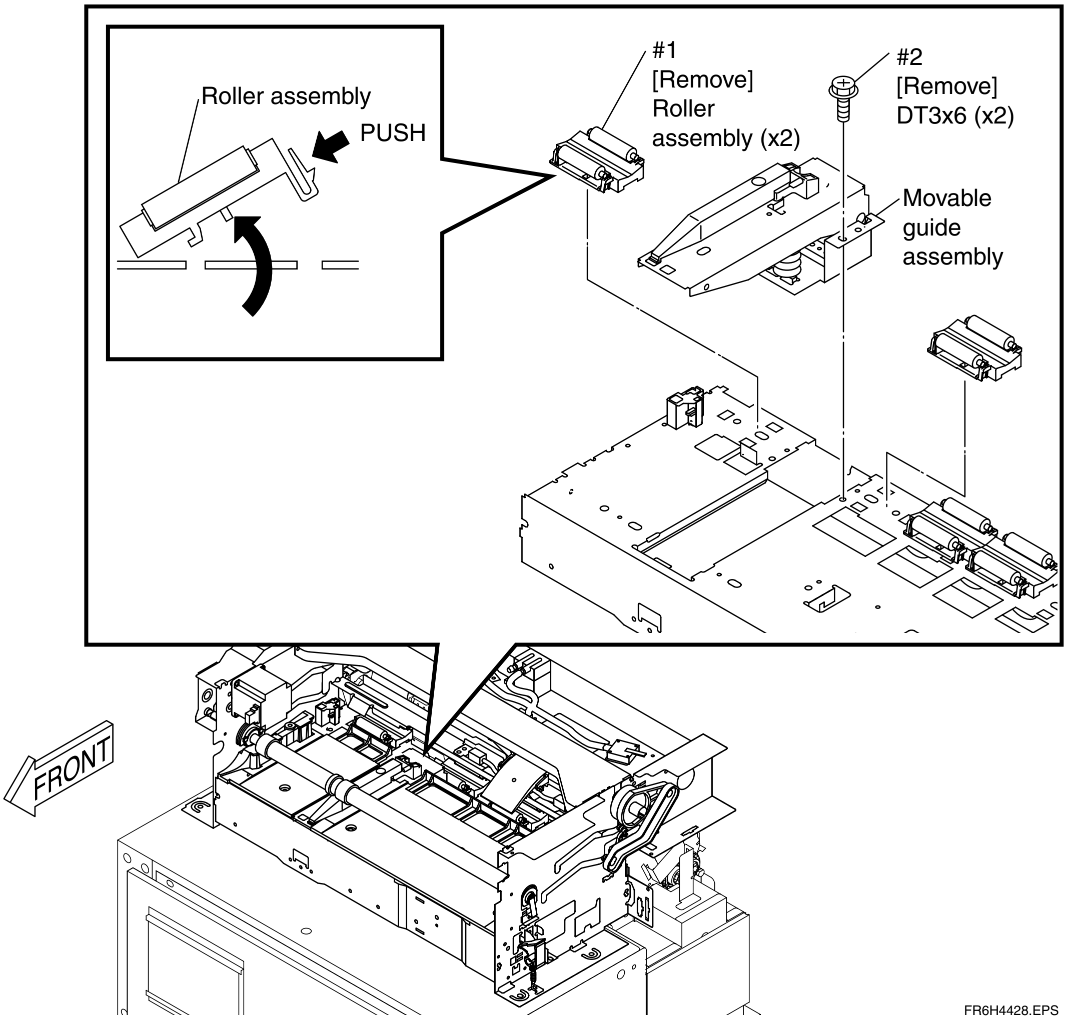
(1) Remove the guide plate.

☞ “5.13 Guide Plate”

(2) Remove the roller assembly.

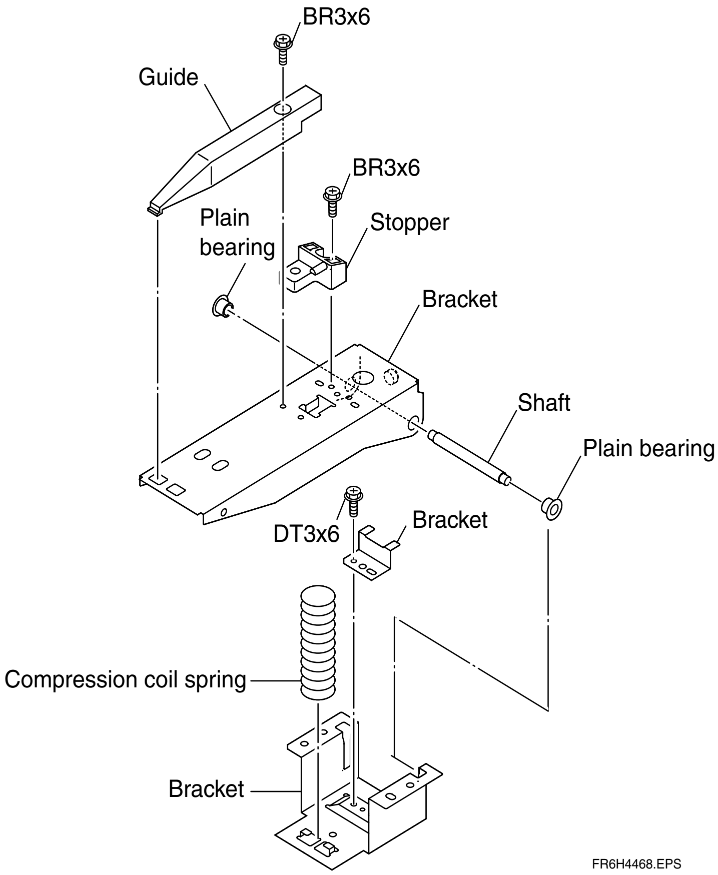
☞ “5.17 Roller Assembly”

(3) Remove the movable guide assembly.


Roller assembly
PUSH
#1
[Remove]
Roller
assembly (x2)
#2
[Remove]
DT3x6 (x2)
Movable
guide
assembly
FRONT

FR6H4428.EPS

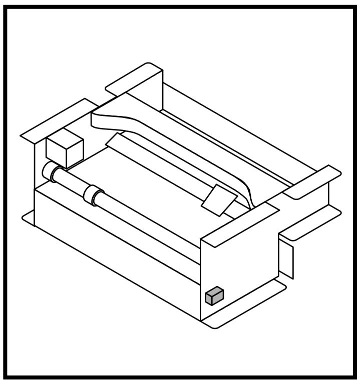
## ■ Exploded View


BR3x6
Guide
BR3x6
Plain bearing
Stopper
Bracket
Shaft
Plain bearing
DT3x6
Bracket
Compression coil spring
Bracket
FR6H4468.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

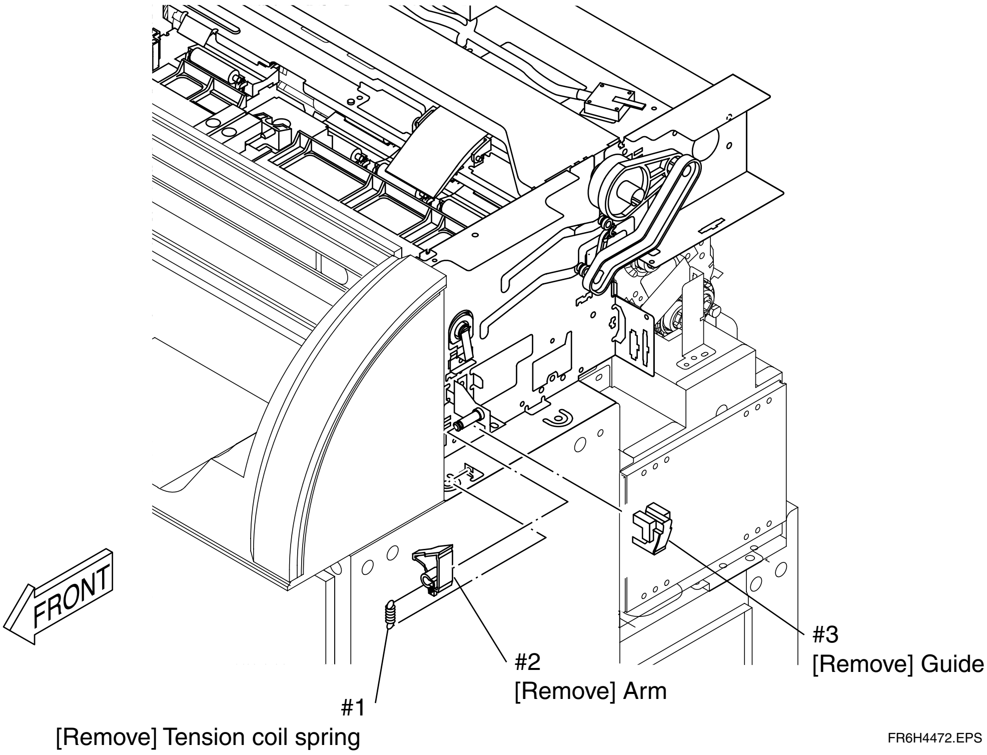
## 5.19 Sensor (SA3)



FR6H4471.EPS

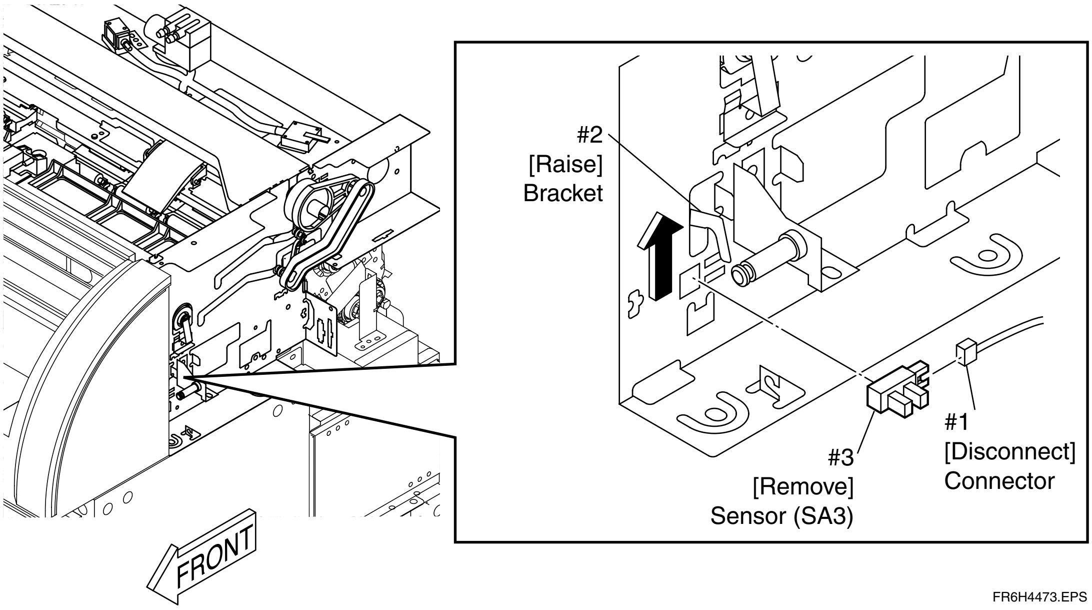
### ■ Removal Procedures

(1) Remove the guide.


FRONT
#1
[Remove] Tension coil spring
#2
[Remove] Arm
#3
[Remove] Guide

FR6H4472.EPS

(2) Remove the sensor (SA3).


#2
[Raise]
Bracket
#3
[Remove]
Sensor (SA3)
#1
[Disconnect]
Connector
FRONT

FR6H4473.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

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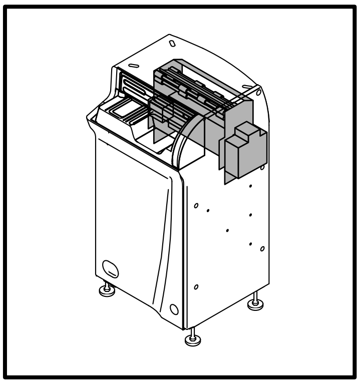
# 6. Removing and Reinstalling the Erasure Conveyor

## 6.1 Erasure Conveyor



FR6H4567.EPS

### ■ Removal Procedures

(1) Remove the cassette set unit.

☞ "5.3 Cassette Set Unit"

(2) Remove the rear cover.

☞ "3.1 Removing and Reinstalling the Covers"

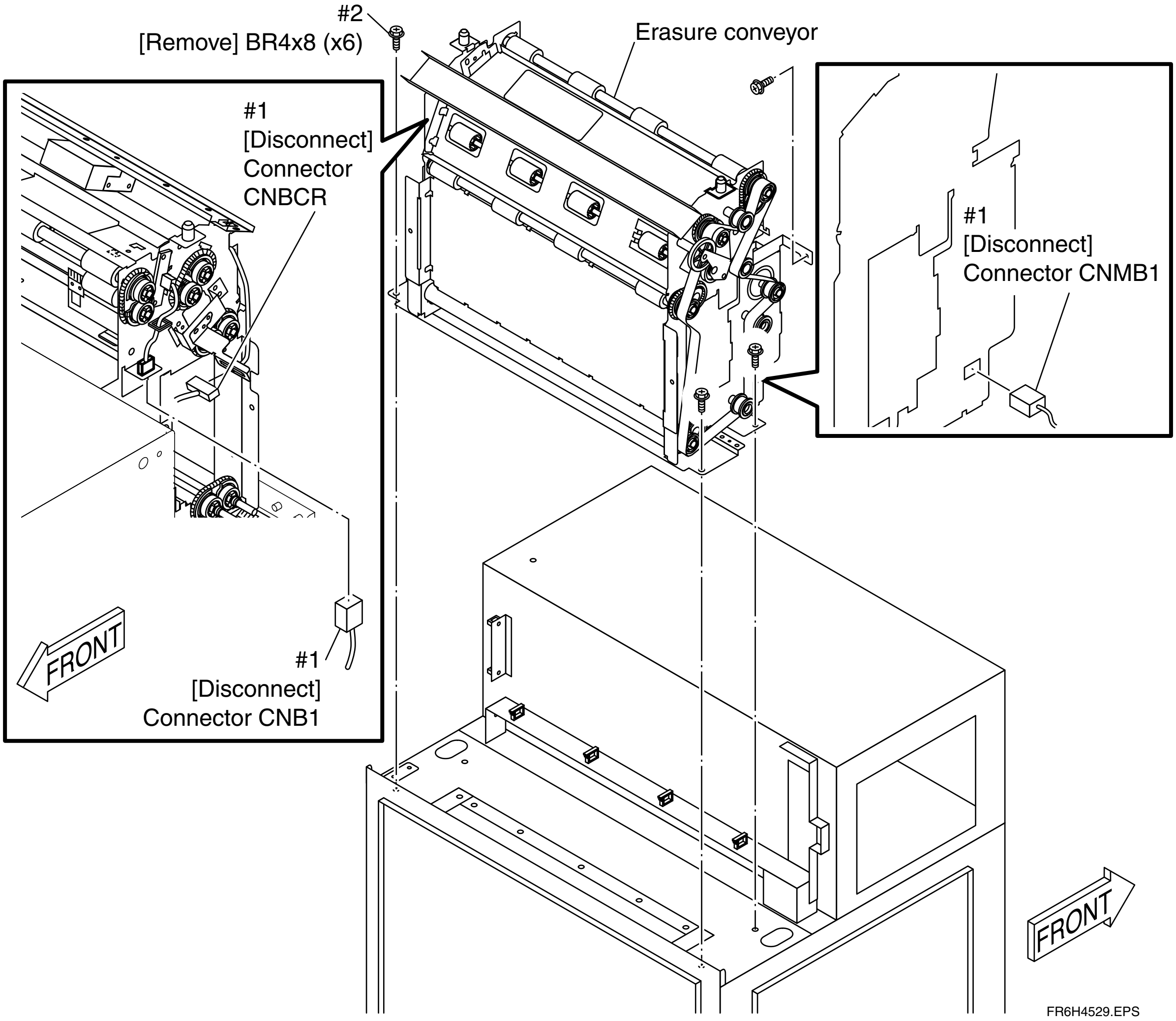
(3) Remove the lamp assembly.

☞ "6.2 Lamp Assembly"

(4) Remove the duct box.

☞ "6.7 Duct box"

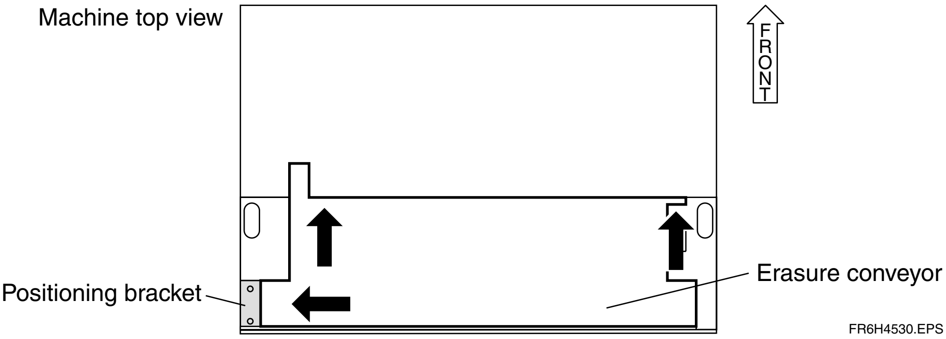
(5) Remove the erasure conveyor.


#2
[Remove] BR4x8 (x6)
Erasure conveyor
#1
[Disconnect]
Connector
CNBCR
#1
[Disconnect]
Connector CNMB1
FRONT
#1
[Disconnect]
Connector CNB1
FRONT
FR6H4529.EPS

## ■ Reinstallation Procedures

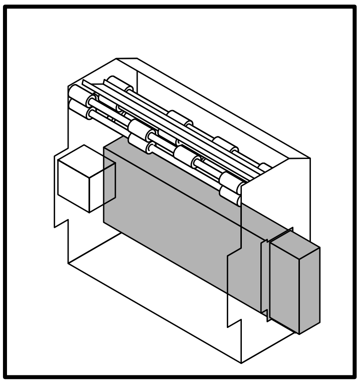
**◆ *NOTE* ◆**

*When installing the erasure conveyor, align it against the positioning bracket.*


Machine top view
FRONT
Positioning bracket
Erasure conveyor
FR6H4530.EPS

For reinstallation, reverse the removal steps.

## 6.2 Lamp Assembly



FR6H4551.EPS

◇ ***REFERENCE*** ◇

*The lamp assembly is mounted along with rail.*

### ■ Removal Procedures

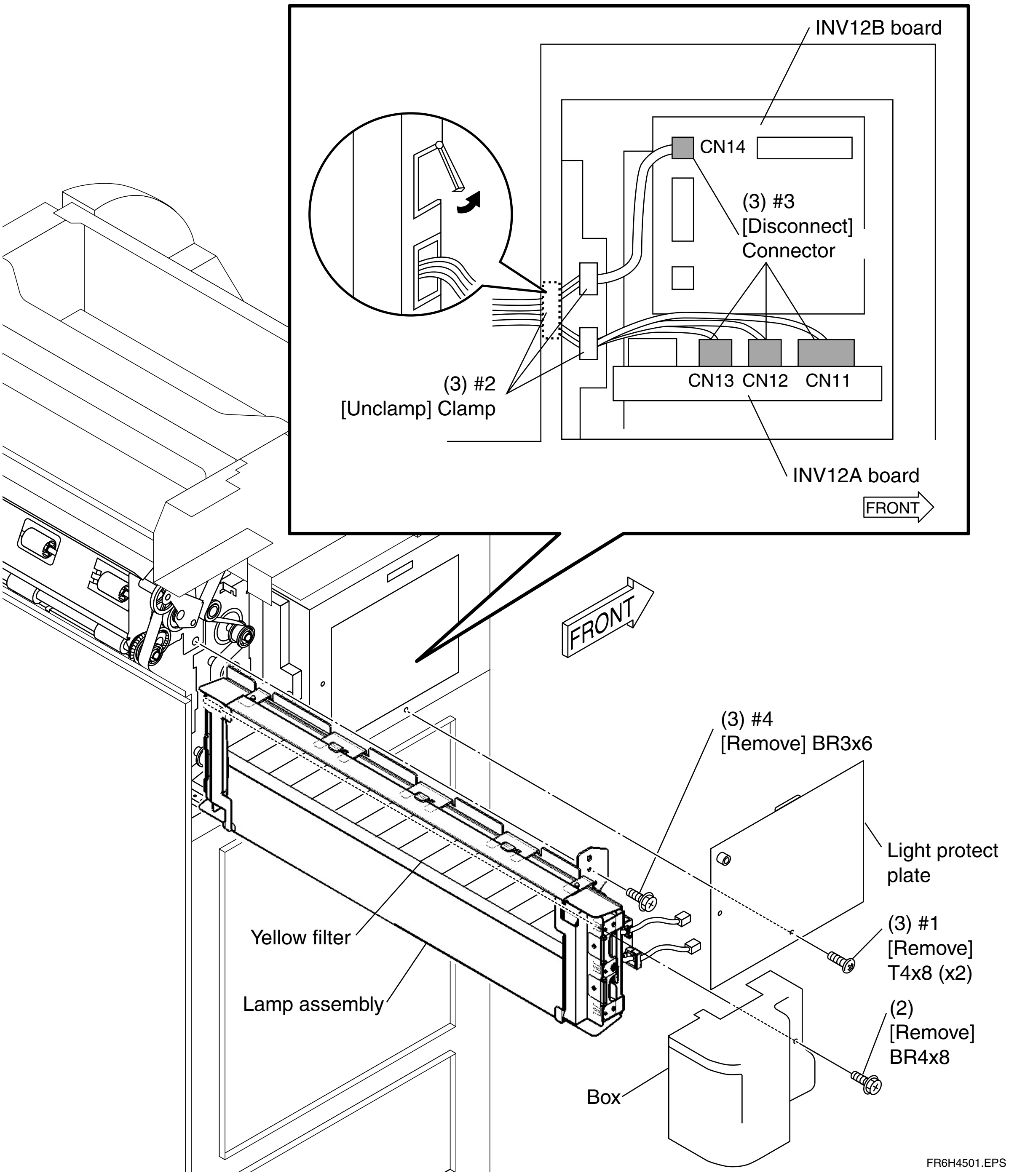
(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

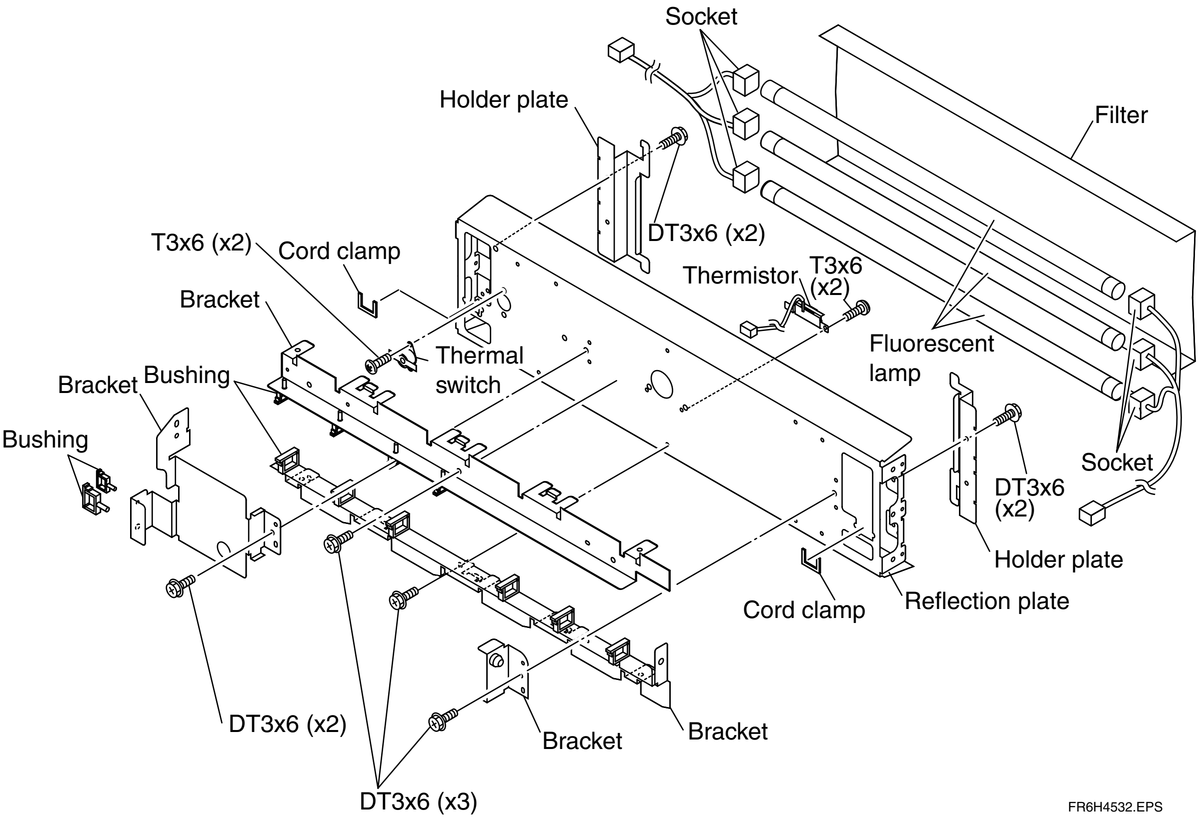
☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the box.

(3) Remove the lamp assembly.


INV12B board
CN14
(3) #3
[Disconnect]
Connector
(3) #2
[Unclamp] Clamp
CN13 CN12 CN11
INV12A board
FRONT
FRONT
(3) #4
[Remove] BR3x6
Light protect
plate
(3) #1
[Remove]
T4x8 (x2)
(2)
[Remove]
BR4x8
Yellow filter
Lamp assembly
Box
FR6H4501.EPS

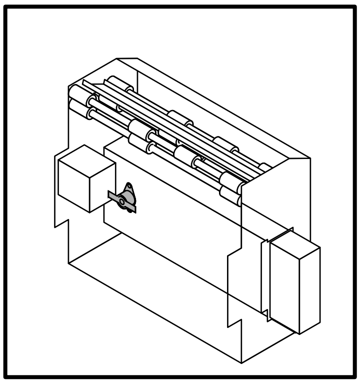
## ■ Exploded View


Socket
Holder plate
Filter
DT3x6 (x2)
T3x6 (x2)
Cord clamp
Thermistor
T3x6 (x2)
Bracket
Thermal switch
Fluorescent lamp
Bracket
Bushing
Bushing
Socket
DT3x6 (x2)
Holder plate
Reflection plate
Cord clamp
DT3x6 (x2)
Bracket
Bracket
DT3x6 (x3)
FR6H4532.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

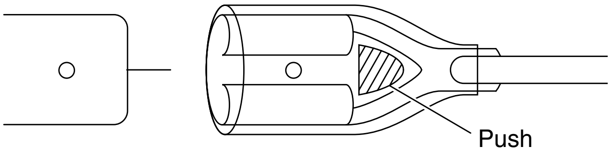
## 6.3 Thermal Switch (TSWB1)



FR6H4555.EPS

**◆ *NOTE* ◆**

*To remove the FASTON terminal, push the shaded portion of the terminal illustrated below to detach it.*



FR6H0001.EPS

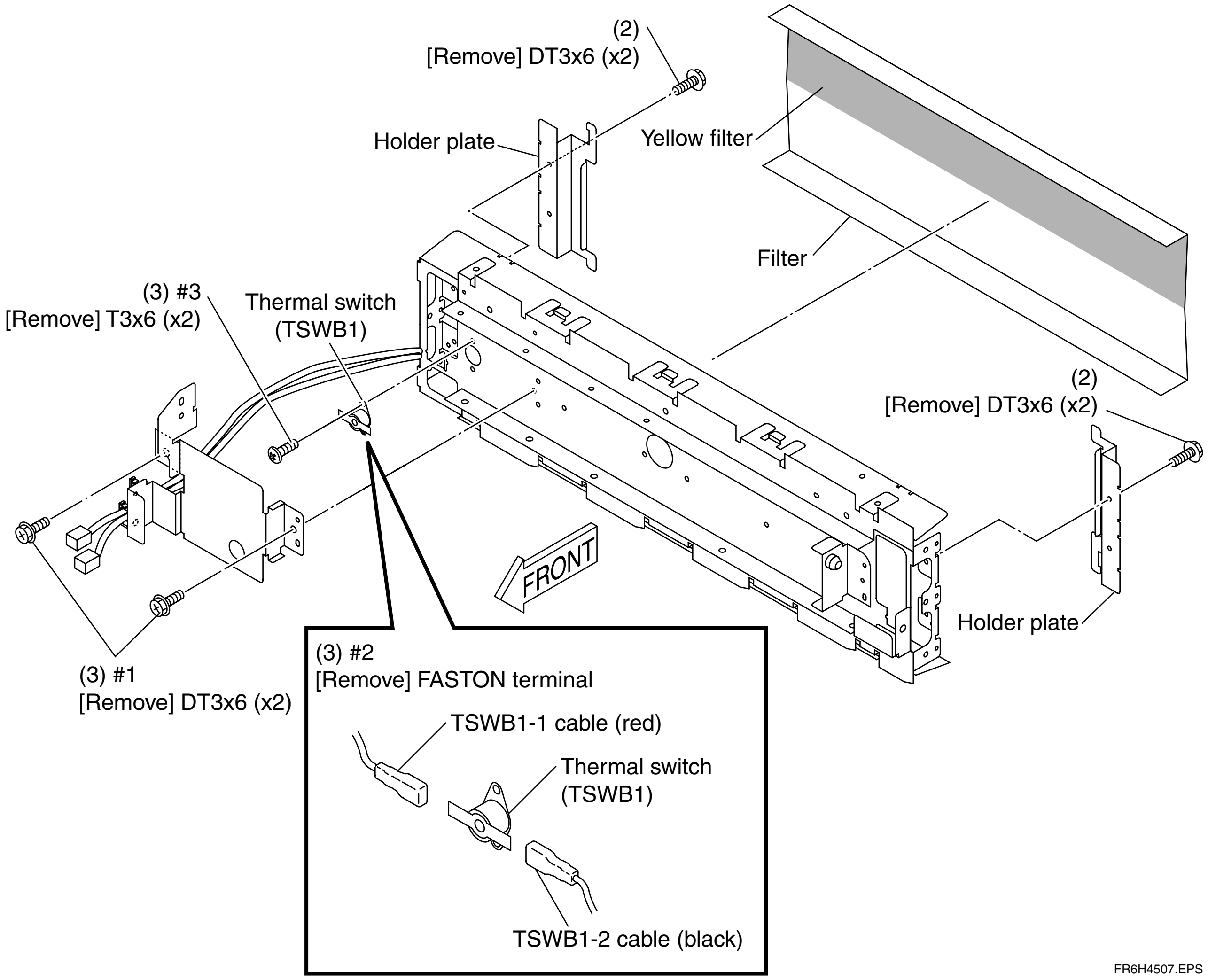
### ■ Removal Procedures

(1) Remove the lamp assembly.

☞ "6.2 Lamp Assembly"

(2) Remove the filter.

(3) Remove the thermal switch (TSWB1).


(2)
[Remove] DT3x6 (x2)
Holder plate
Yellow filter
Filter
(3) #3
[Remove] T3x6 (x2)
Thermal switch
(TSWB1)
(2)
[Remove] DT3x6 (x2)
FRONT
Holder plate
(3) #1
[Remove] DT3x6 (x2)
(3) #2
[Remove] FASTON terminal
TSWB1-1 cable (red)
Thermal switch
(TSWB1)
TSWB1-2 cable (black)

FR6H4507.EPS

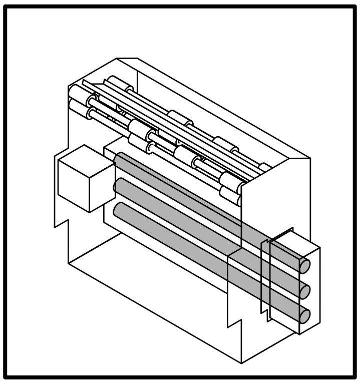
## ■ Reinstallation Procedures

**◆ *NOTE* ◆**

*To attach the FASTON terminal, insert it all the way to secure it in place.*

For reinstallation, reverse the removal steps.

# 6.4 Lamp



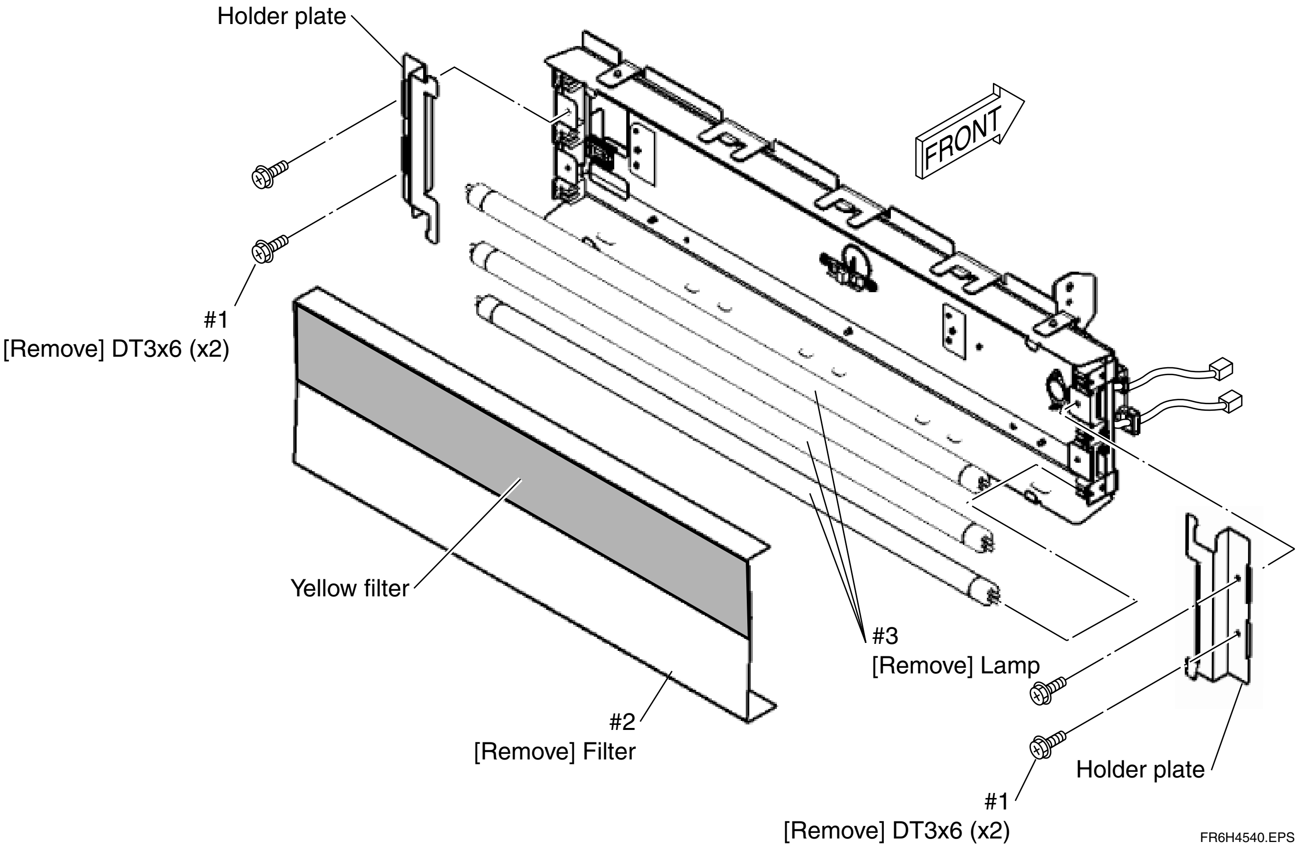
FR6H4552.EPS

## ■ Removal Procedures

(1) Remove the lamp assembly.

☞ “6.2 Lamp Assembly”

(2) Remove the lamps.

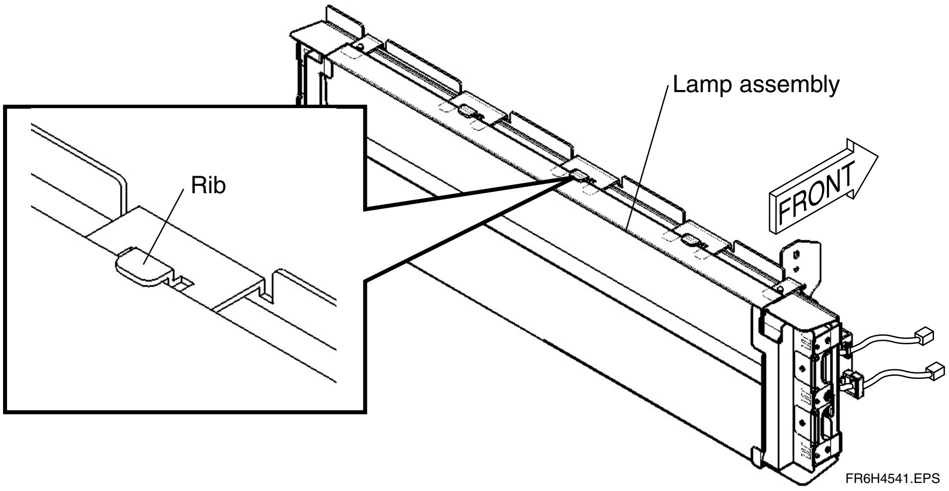

Holder plate
FRONT
#1
[Remove] DT3x6 (x2)
Yellow filter
#3
[Remove] Lamp
#2
[Remove] Filter
Holder plate
#1
[Remove] DT3x6 (x2)

FR6H4540.EPS

## ■ Reinstallation Procedures

**◆ *NOTES* ◆**

- *After installing the filter, wipe the filter with a moistened cloth.*
- *To install the filter, put the filter under the rib of the lamp assembly.*



FR6H4541.EPS

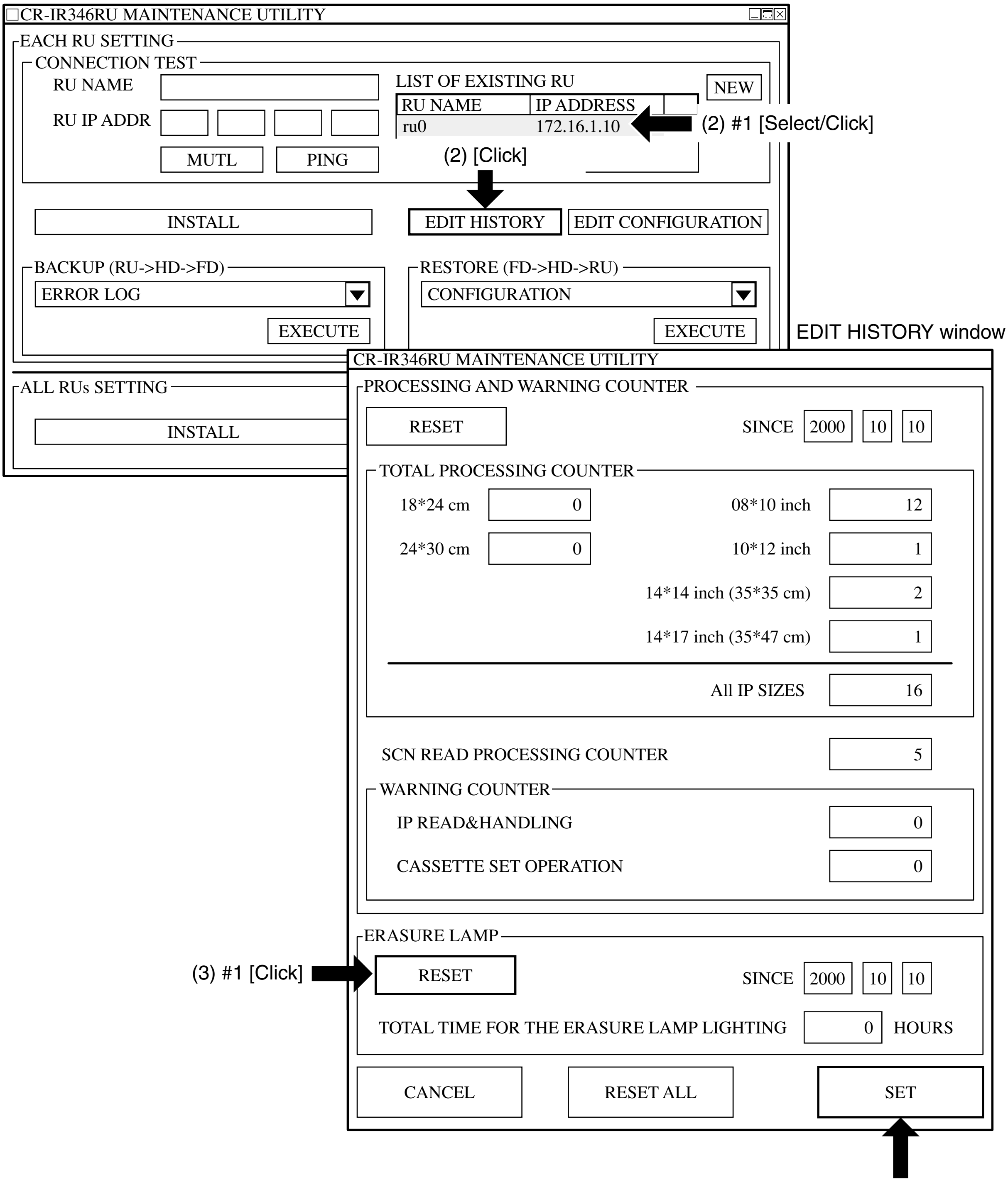
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Reset the erasure lamp lightening time.

(1) Open the MAINTENANCE UTILITY window.
(2) Open the EDIT HISTORY window.
(3) Reset the erasure lamp lightening time.

MAINTENANCE UTILITY window



☐CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
RU NAME
RU IP ADDR
MUTL
PING
LIST OF EXISTING RU
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU->HD->FD)
EXECUTE
RESTORE (FD->HD->RU)
EXECUTE
ALL RUs SETTING
INSTALL
CR-IR346RU MAINTENANCE UTILITY
PROCESSING AND WARNING COUNTER
RESET
ERASURE LAMP
RESET
CANCEL
RESET ALL
SET

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU->HD->FD): ERROR LOG

RESTORE (FD->HD->RU): CONFIGURATION

(2) #1 [Select/Click]

(2) [Click]

EDIT HISTORY window

PROCESSING AND WARNING COUNTER — SINCE 2000 10 10

TOTAL PROCESSING COUNTER

18*24 cm: 0
24*30 cm: 0
08*10 inch: 12
10*12 inch: 1
14*14 inch (35*35 cm): 2
14*17 inch (35*47 cm): 1
All IP SIZES: 16

SCN READ PROCESSING COUNTER: 5

WARNING COUNTER

IP READ&HANDLING: 0
CASSETTE SET OPERATION: 0

ERASURE LAMP — SINCE 2000 10 10

TOTAL TIME FOR THE ERASURE LAMP LIGHTING: 0 HOURS

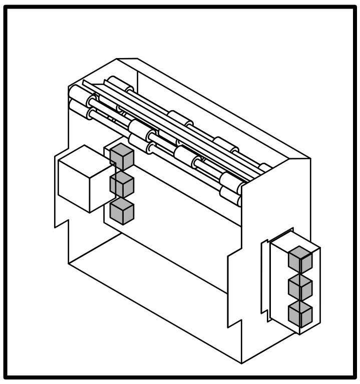
(3) #1 [Click]

(3) #2 [Click]

FR6H4568.EPS

*BLANK PAGE*

# 6.5 Lamp Socket



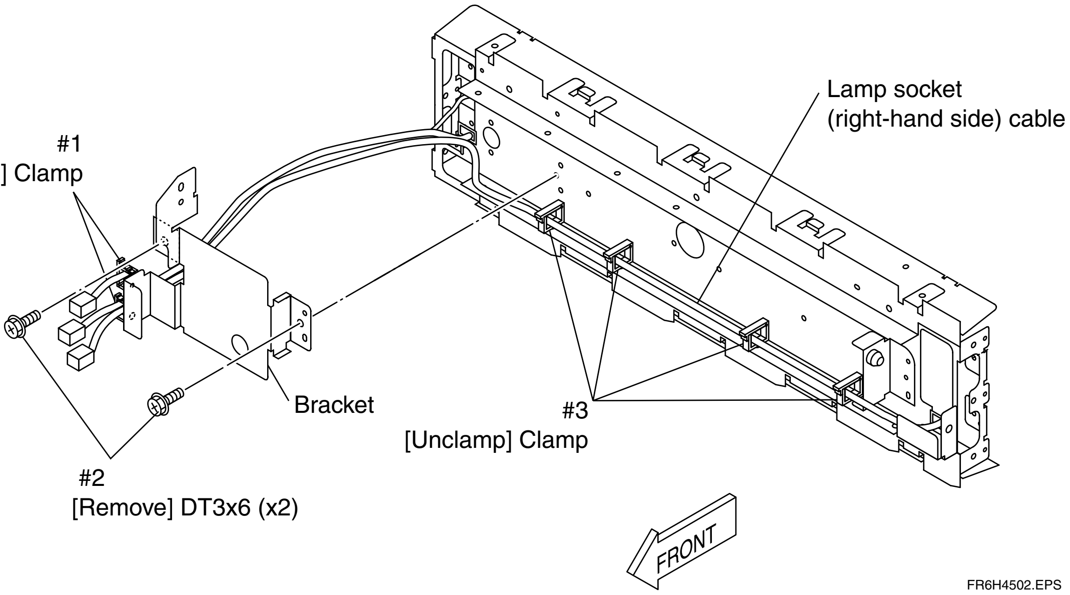
FR6H4553.EPS

## ■ Removal Procedures

(1) Remove the lamp.

☞ “6.4 Lamp”

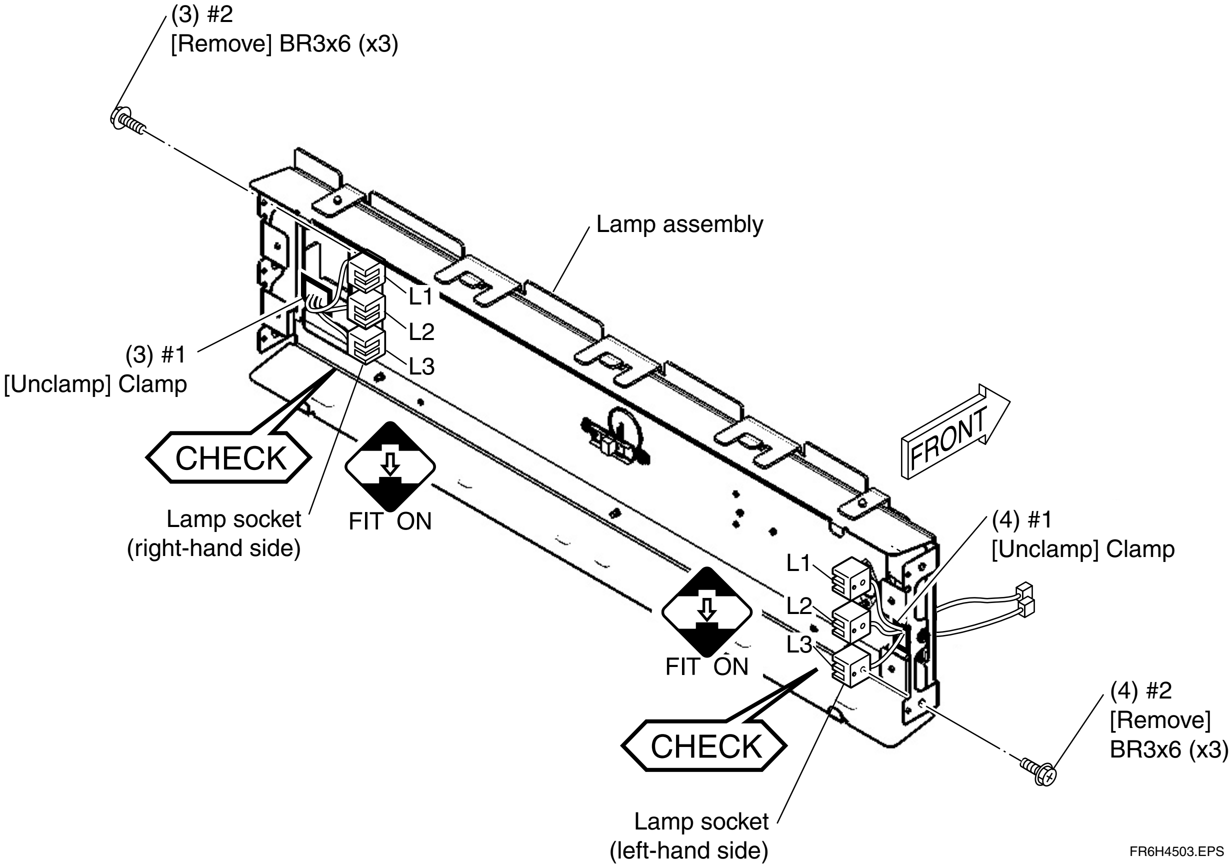
(2) Remove the bracket.


Lamp socket
(right-hand side) cable
#1
[Unclamp] Clamp
Bracket
#3
[Unclamp] Clamp
#2
[Remove] DT3x6 (x2)
FRONT

FR6H4502.EPS

(3) Remove the lamp socket (right-hand side).

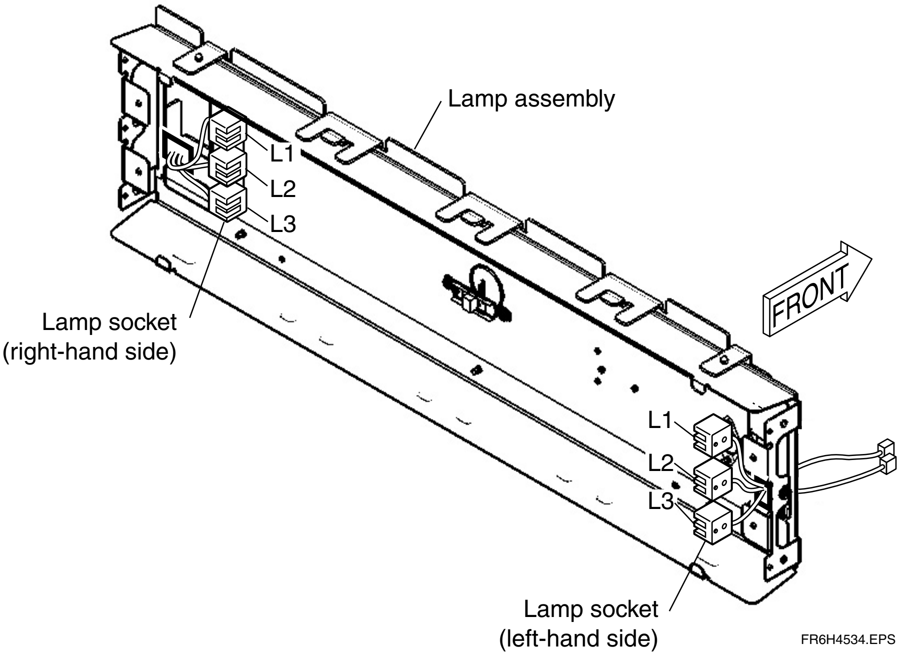
(4) Remove the lamp socket (left-hand side).


(3) #2
[Remove] BR3x6 (x3)
Lamp assembly
L1
L2
L3
(3) #1
[Unclamp] Clamp
CHECK
Lamp socket
(right-hand side)
FIT ON
FRONT
(4) #1
[Unclamp] Clamp
L1
L2
L3
FIT ON
CHECK
(4) #2
[Remove]
BR3x6 (x3)
Lamp socket
(left-hand side)
FR6H4503.EPS

## ■ Reinstallation Procedures

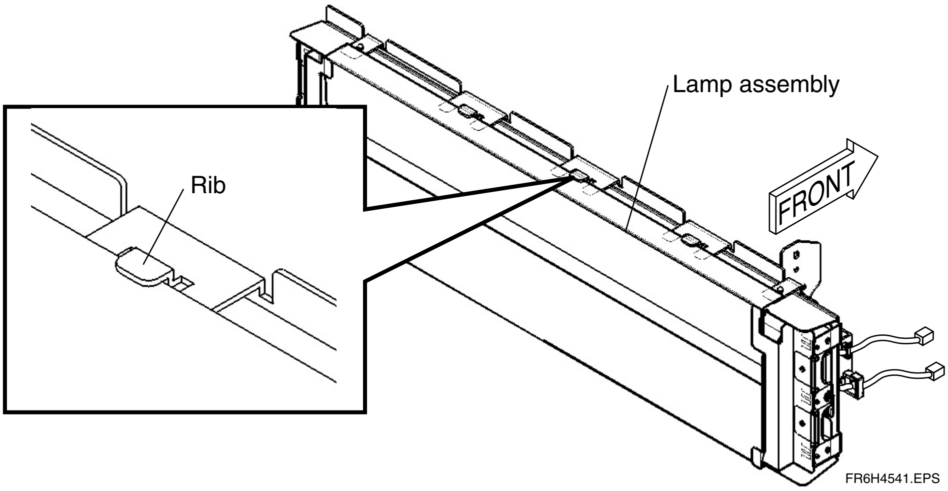
### ◆ *INSTRUCTION* ◆

*When installing the lamp sockets, they should be installed in place as illustrated below.*


Lamp assembly
L1
L2
L3
Lamp socket
(right-hand side)
FRONT
L1
L2
L3
Lamp socket
(left-hand side)
FR6H4534.EPS

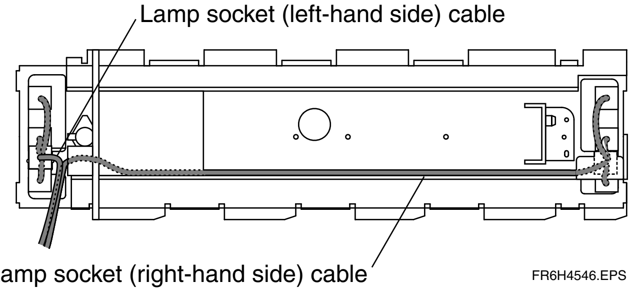
### ◆ *NOTES* ◆

- *After installing the filter, wipe the filter with a moistened cloth.*
- *To install the filter, put the filter under the rib of the lamp assembly.*


Lamp assembly
Rib
FRONT
FR6H4541.EPS

### ◇ *REFERENCE* ◇

*Cable route*

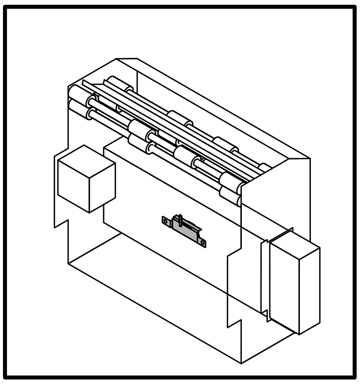

Lamp socket (left-hand side) cable
Lamp socket (right-hand side) cable
FR6H4546.EPS

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the lamp sockets are installed in their proper position.

# 6.6 Thermistor



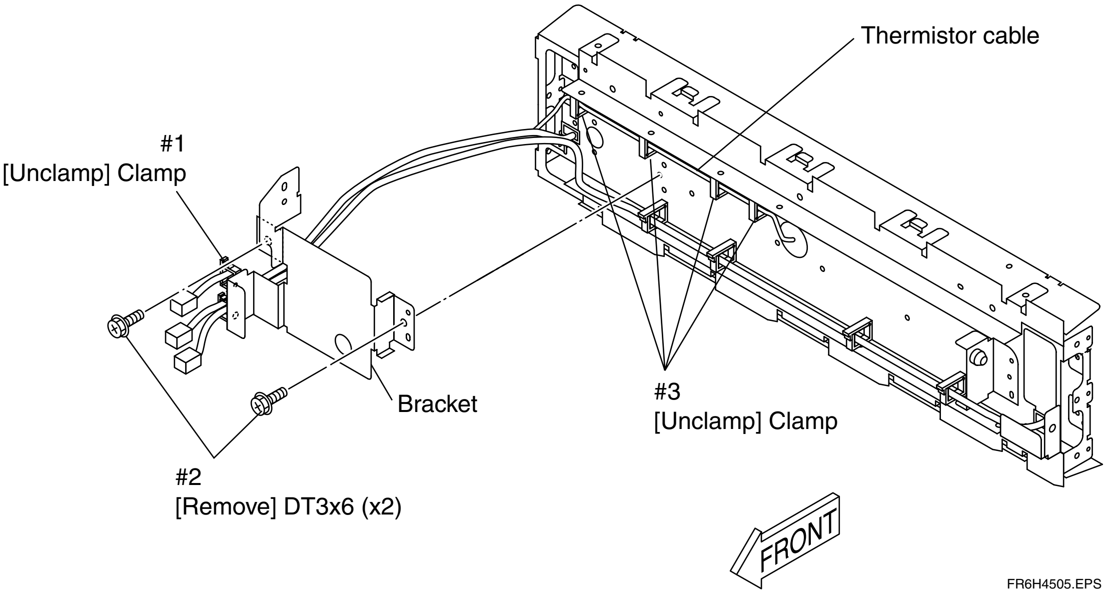
FR6H4554.EPS

## ■ Removal Procedures

(1) Remove the lamp.

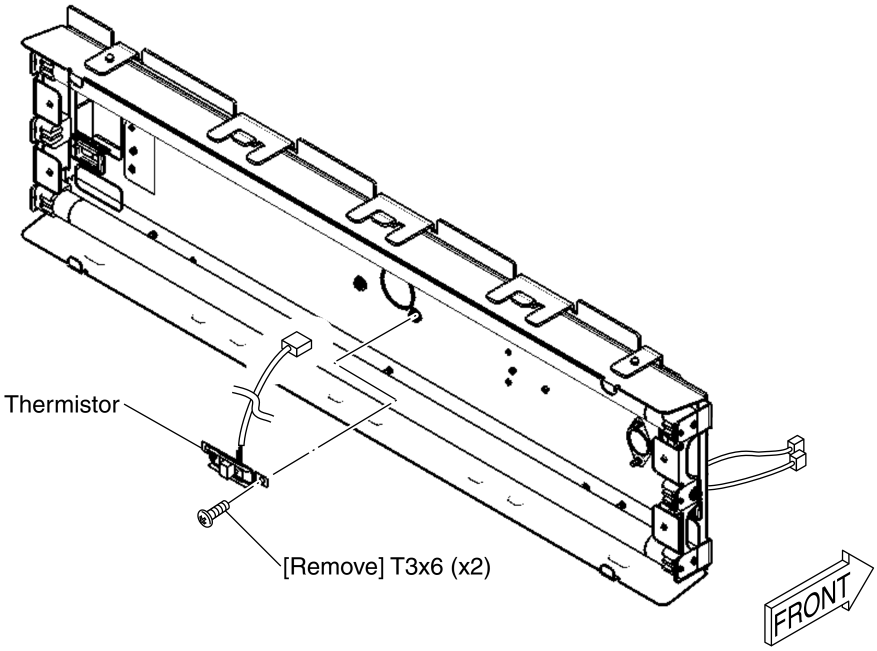
☞ “6.4 Lamp”

(2) Remove the bracket.


Thermistor cable
#1
[Unclamp] Clamp
Bracket
#3
[Unclamp] Clamp
#2
[Remove] DT3x6 (x2)
FRONT

FR6H4505.EPS

(3) Remove the thermistor.

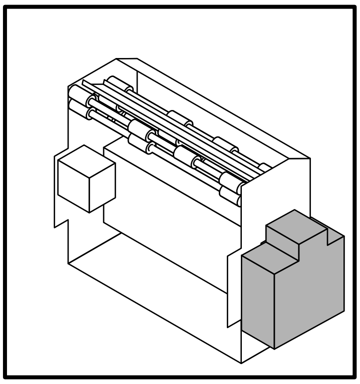

Thermistor
[Remove] T3x6 (x2)
FRONT

FR6H4506.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 6.7 Duct Box



FR6H4556.EPS

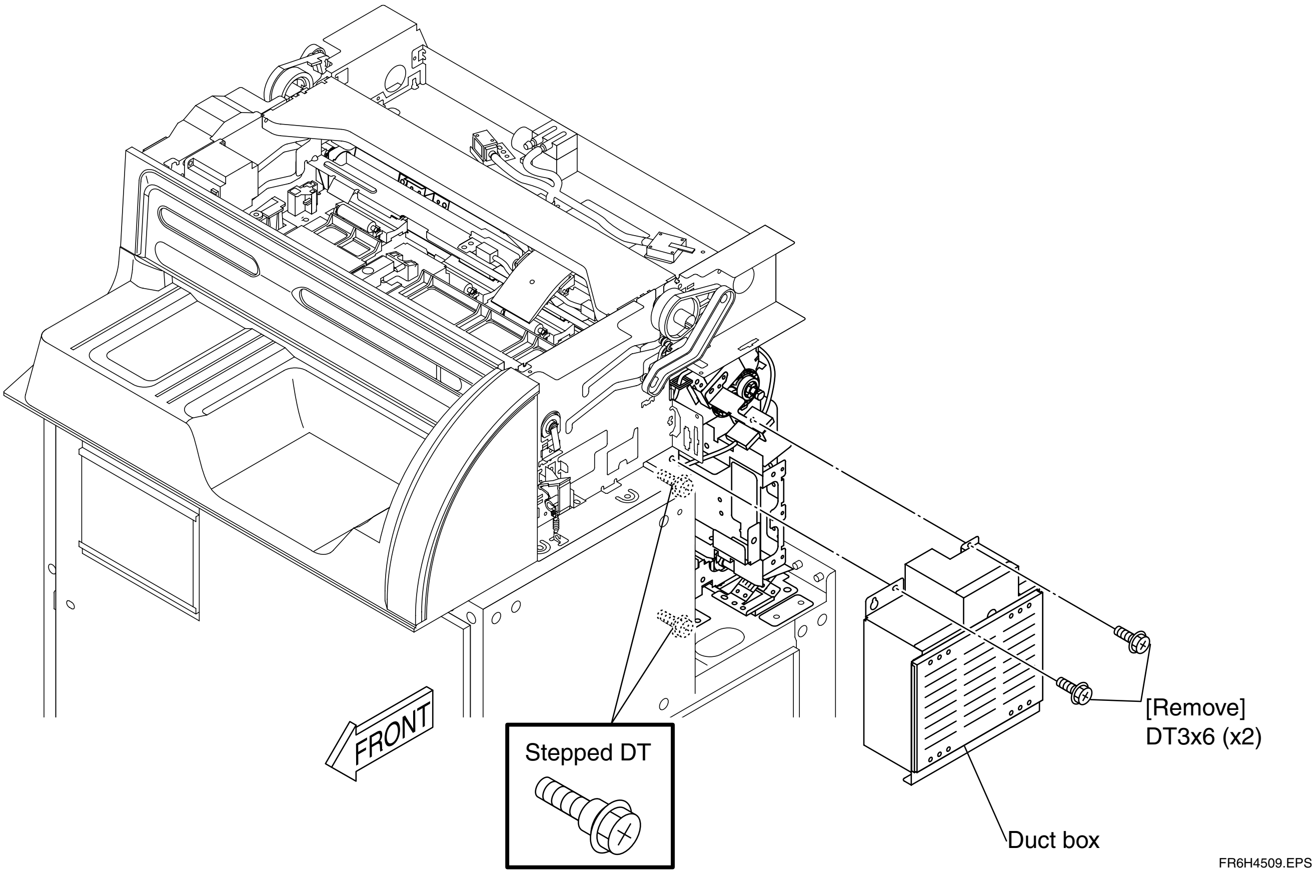
## ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ “3.1 Removing and Reinstalling the Covers”

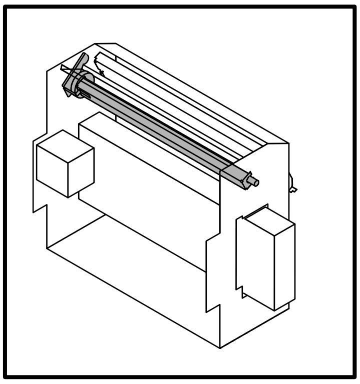
(2) Remove the duct box.


FRONT
Stepped DT
[Remove]
DT3x6 (x2)
Duct box
FR6H4509.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 6.8 Cleaning Roller Assembly



FR6H4557.EPS

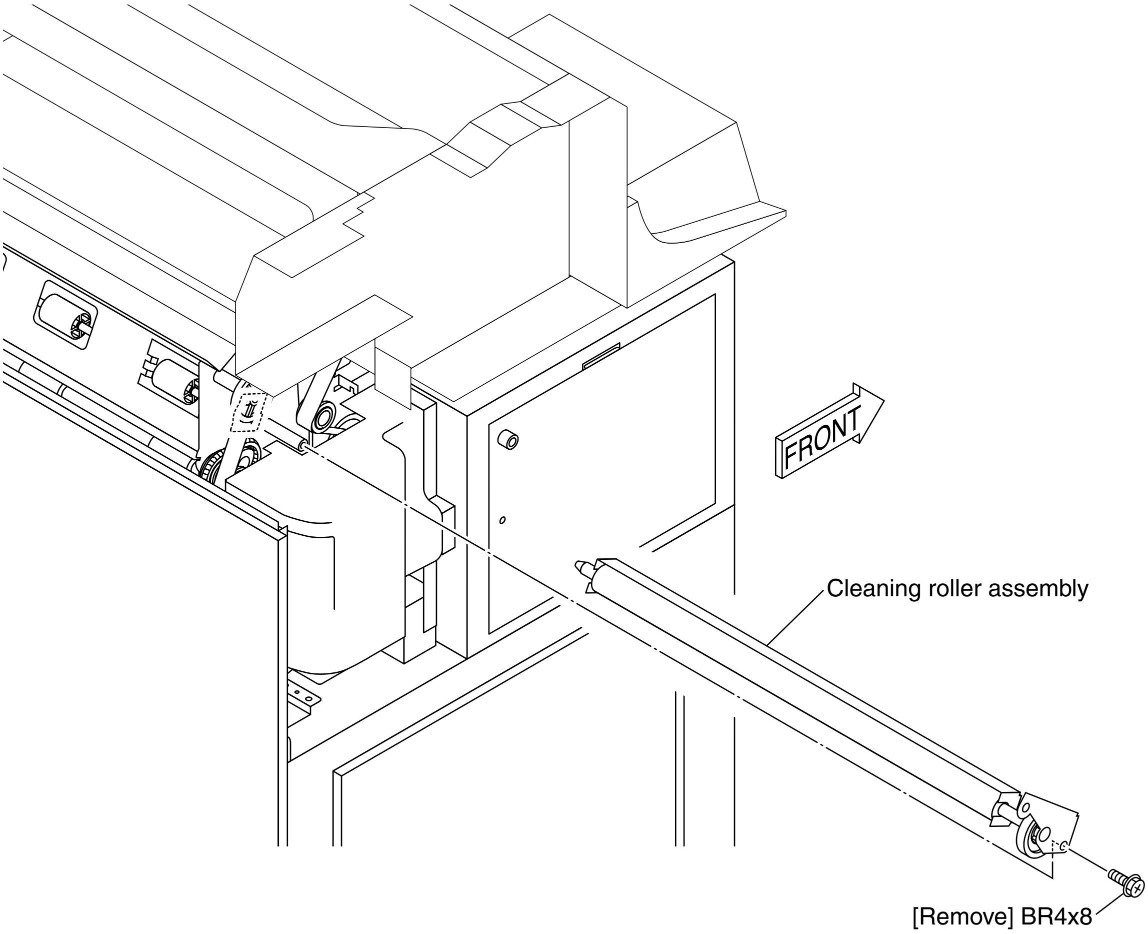
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

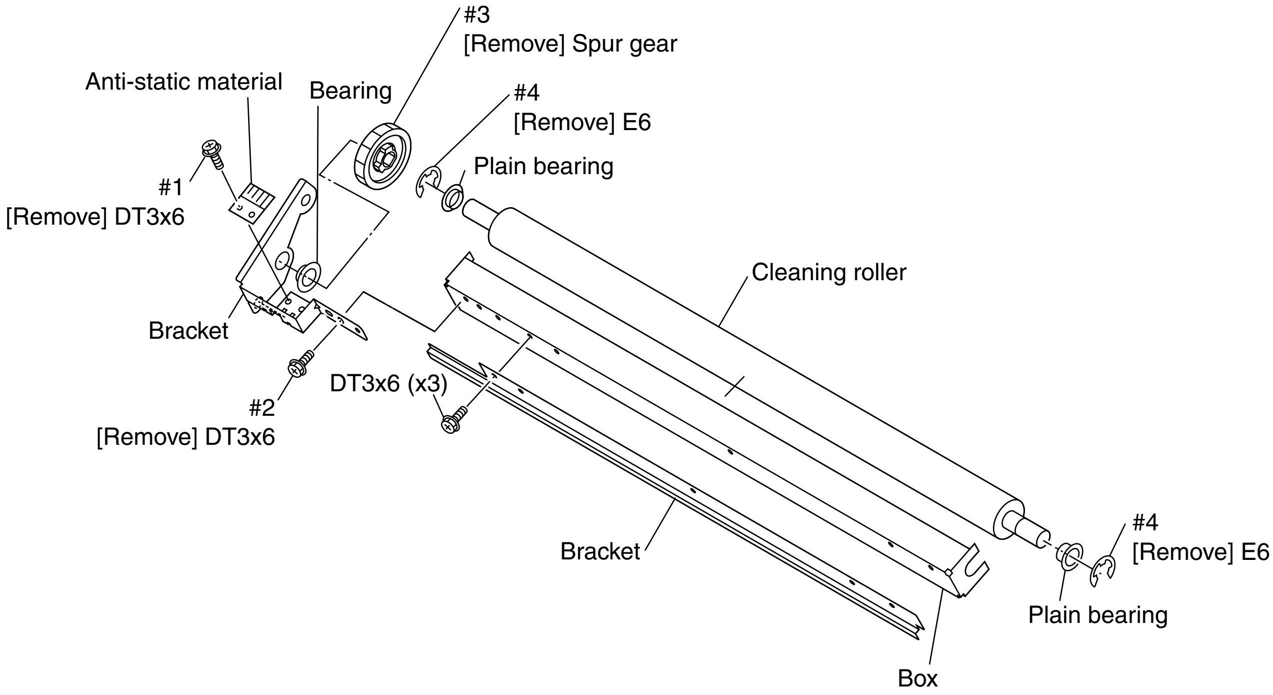
☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the cleaning roller assembly.


FRONT
Cleaning roller assembly
[Remove] BR4x8

FR6H4510.EPS

## ■ Exploded View

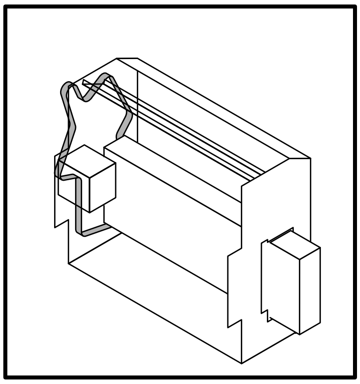

#3
[Remove] Spur gear
Anti-static material
Bearing
#4
[Remove] E6
Plain bearing
#1
[Remove] DT3x6
Cleaning roller
Bracket
#2
[Remove] DT3x6
DT3x6 (x3)
Bracket
#4
[Remove] E6
Plain bearing
Box

FR6H4533.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 6.9 Timing Belt



FR6H4558.EPS

## ■ Removal Procedures

(1) Remove the cassette set unit.

☞ “5.3 Cassette Set Unit”

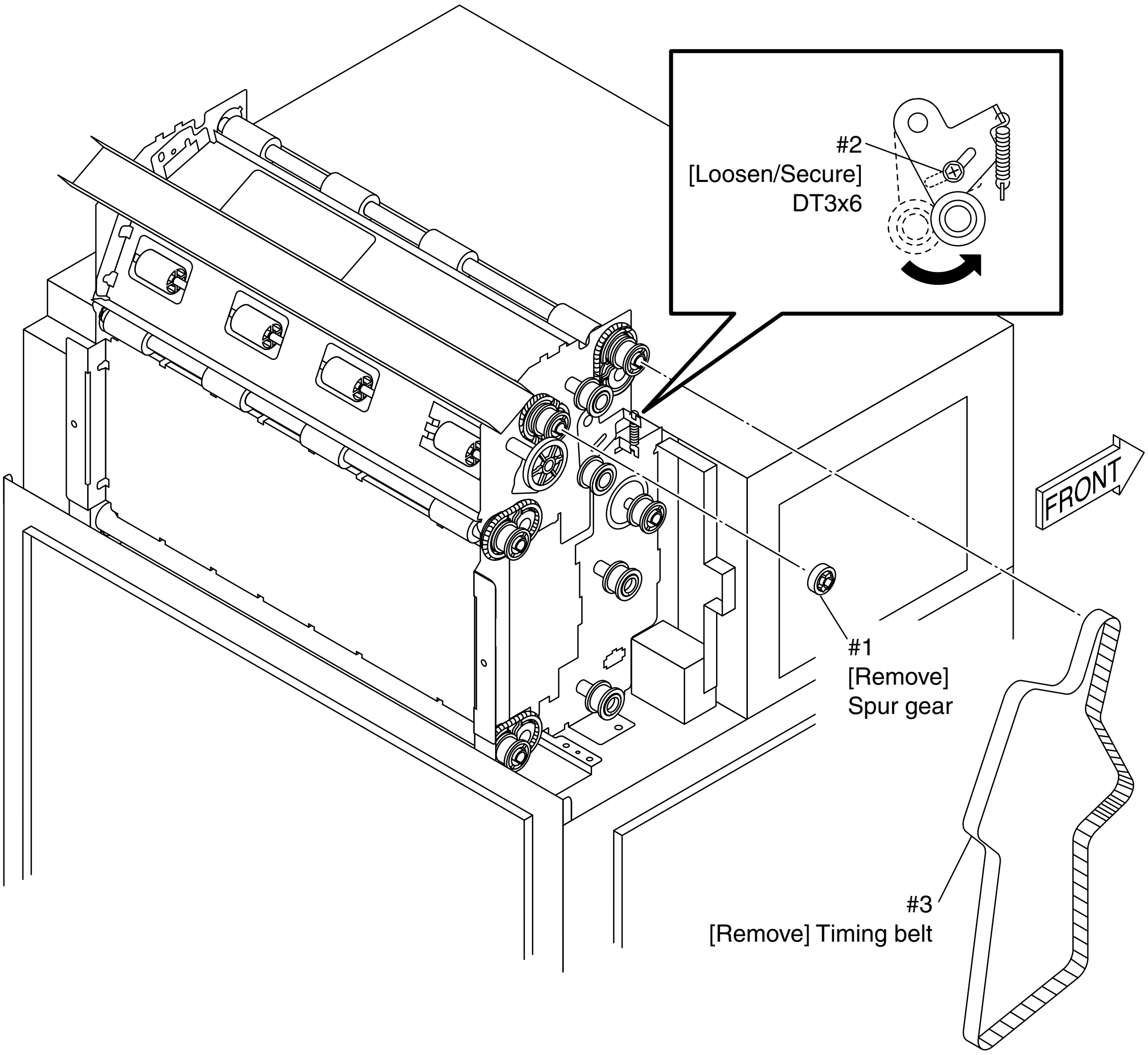
(2) Remove the lamp assembly.

☞ “6.2 Lamp Assembly”

(3) Remove the cleaning roller assembly.

☞ “6.8 Cleaning Roller Assembly”

(4) Remove the timing belt.


#2
[Loosen/Secure]
DT3x6
FRONT
#1
[Remove]
Spur gear
#3
[Remove] Timing belt

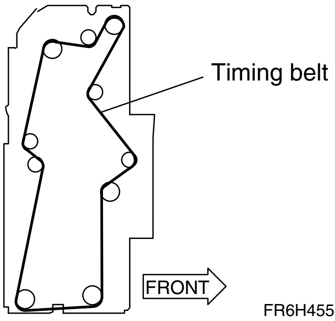
FR6H4511.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

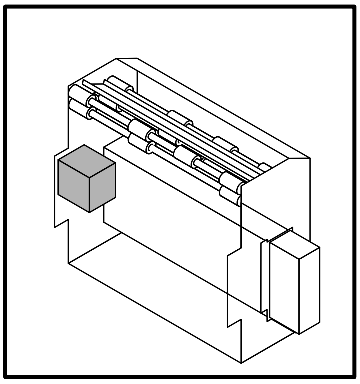
## ■ Check/Adjustment Procedures

- Make sure that the timing belt is mounted in its proper position.


Timing belt
FRONT

FR6H4550.EPS

# 6.10 Motor (MB1)



FR6H4563.EPS

## ■ Removal Procedures

(1) Remove the lamp assembly.

☞ “6.2 Lamp Assembly”

(2) Remove the rear cover.

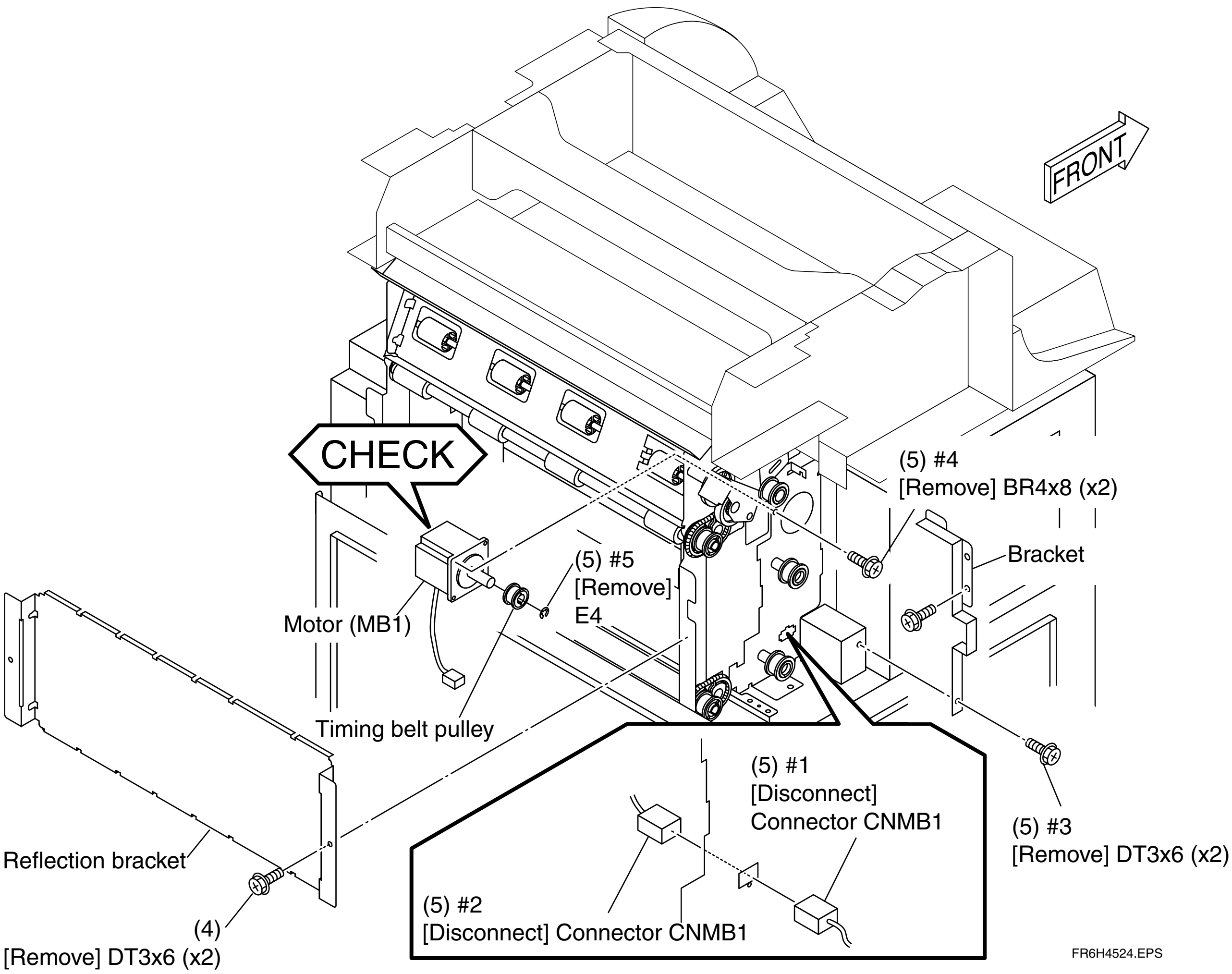
☞ “3.1 Removing and Reinstalling the Covers”

(3) Loosen the belt tension.

☞ “6.9 Timing Belt”

(4) Remove the reflection bracket.

(5) Remove the motor (MB1).

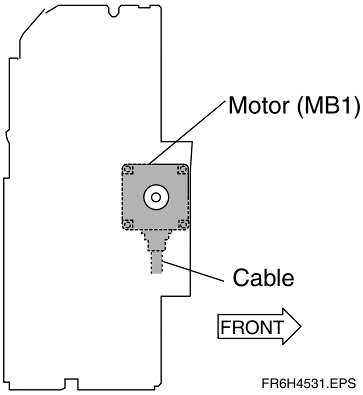

FRONT
CHECK
(5) #4
[Remove] BR4x8 (x2)
Bracket
(5) #5
[Remove]
E4
Motor (MB1)
Timing belt pulley
(5) #1
[Disconnect]
Connector CNMB1
(5) #3
[Remove] DT3x6 (x2)
Reflection bracket
(4)
[Remove] DT3x6 (x2)
(5) #2
[Disconnect] Connector CNMB1
FR6H4524.EPS

## ■ Reinstallation Procedures

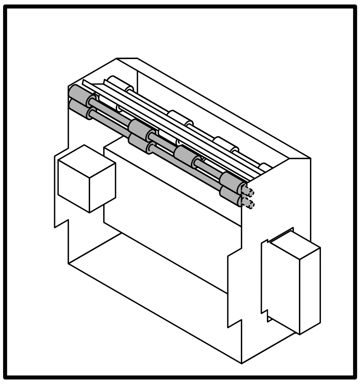
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the motor (MB1) is mounted in its proper position.

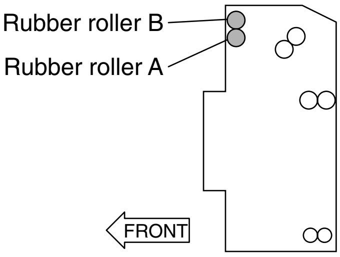

Motor (MB1)
Cable
FRONT
FR6H4531.EPS

## 6.11 Rubber Rollers A and B



FR6H4559.EPS

### ■ Rubber Roller Locations



Rubber roller B
Rubber roller A
FRONT

FR6H4542.EPS

### ◇ REFERENCE ◇

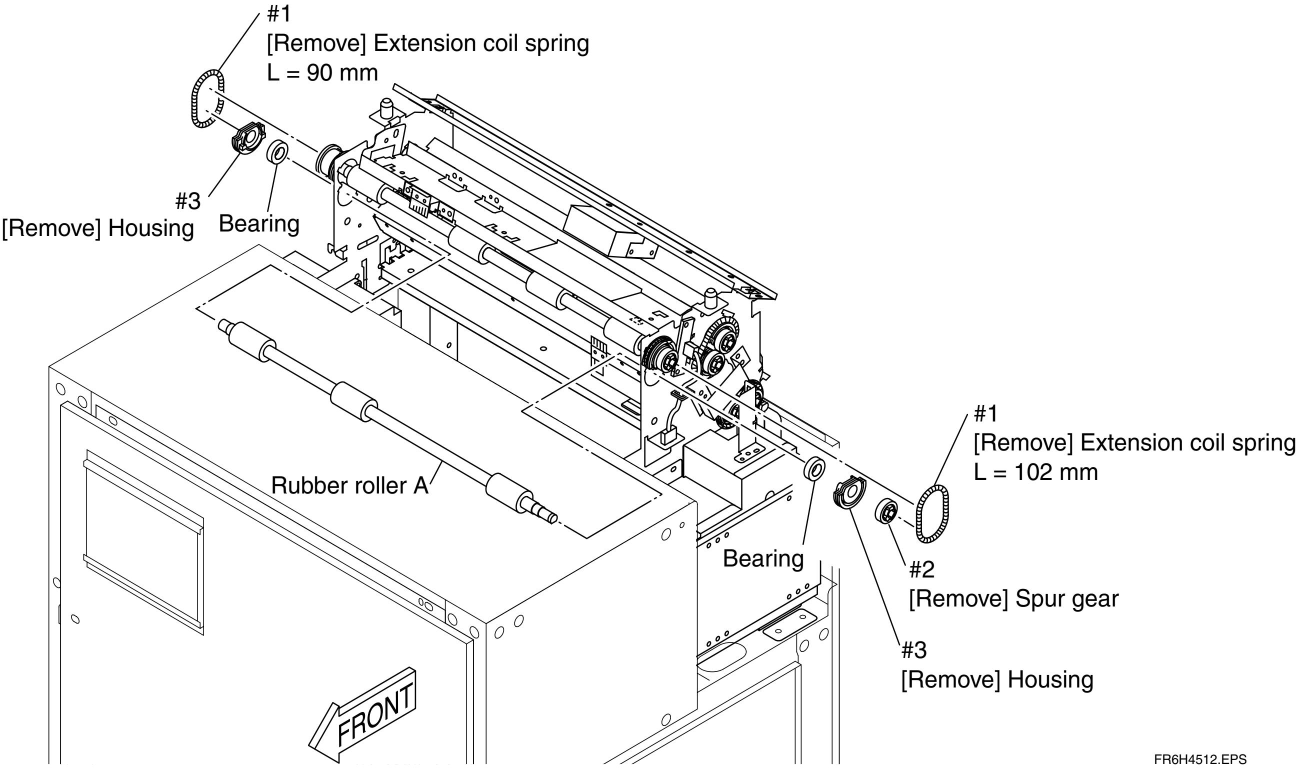
*To remove the rubber roller B, the rubber roller A should be removed first.*
*The rubber roller B cannot be removed alone.*

### ■ Removal Procedures

(1) Remove the timing belt.

☞ "6.9 Timing Belt"

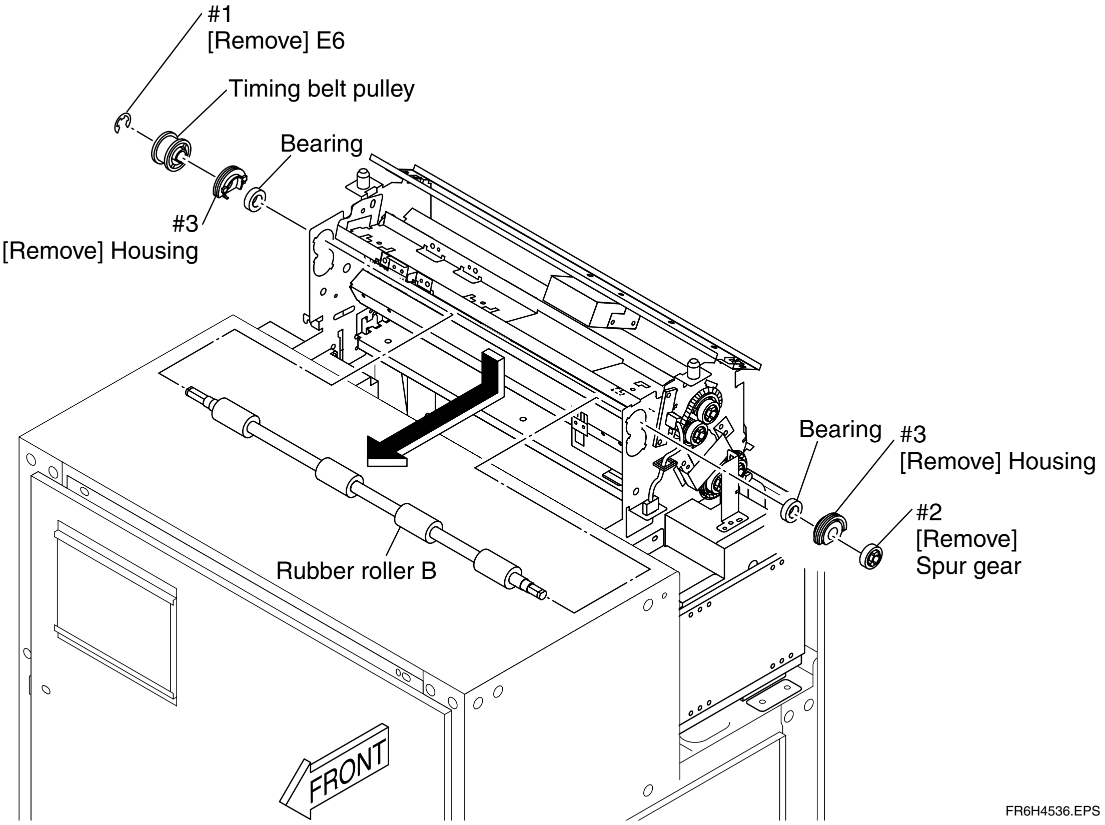
(2) Remove the rubber roller A.



#1
[Remove] Extension coil spring
L = 90 mm
#3
[Remove] Housing
Bearing
Rubber roller A
FRONT
#1
[Remove] Extension coil spring
L = 102 mm
Bearing
#2
[Remove] Spur gear
#3
[Remove] Housing

FR6H4512.EPS

(3) Remove the rubber roller B.


#1
[Remove] E6
Timing belt pulley
Bearing
#3
[Remove] Housing
Bearing
#3
[Remove] Housing
#2
[Remove]
Spur gear
Rubber roller B
FRONT
FR6H4536.EPS

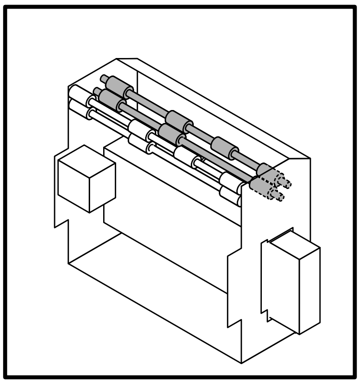
## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*The extension coil springs and rubber rollers differ in size depending on where they are attached. Use care not to confuse their locations.*

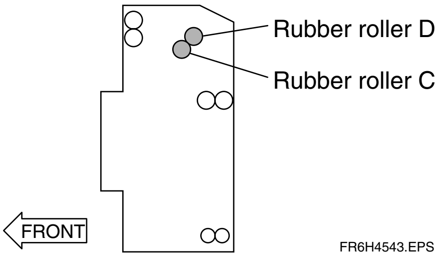
For reinstallation, reverse the removal steps.

# 6.12 Rubber Rollers C and D



FR6H4560.EPS

■ Rubber Roller Locations


Rubber roller D
Rubber roller C
FRONT

FR6H4543.EPS

**◇ REFERENCE ◇**

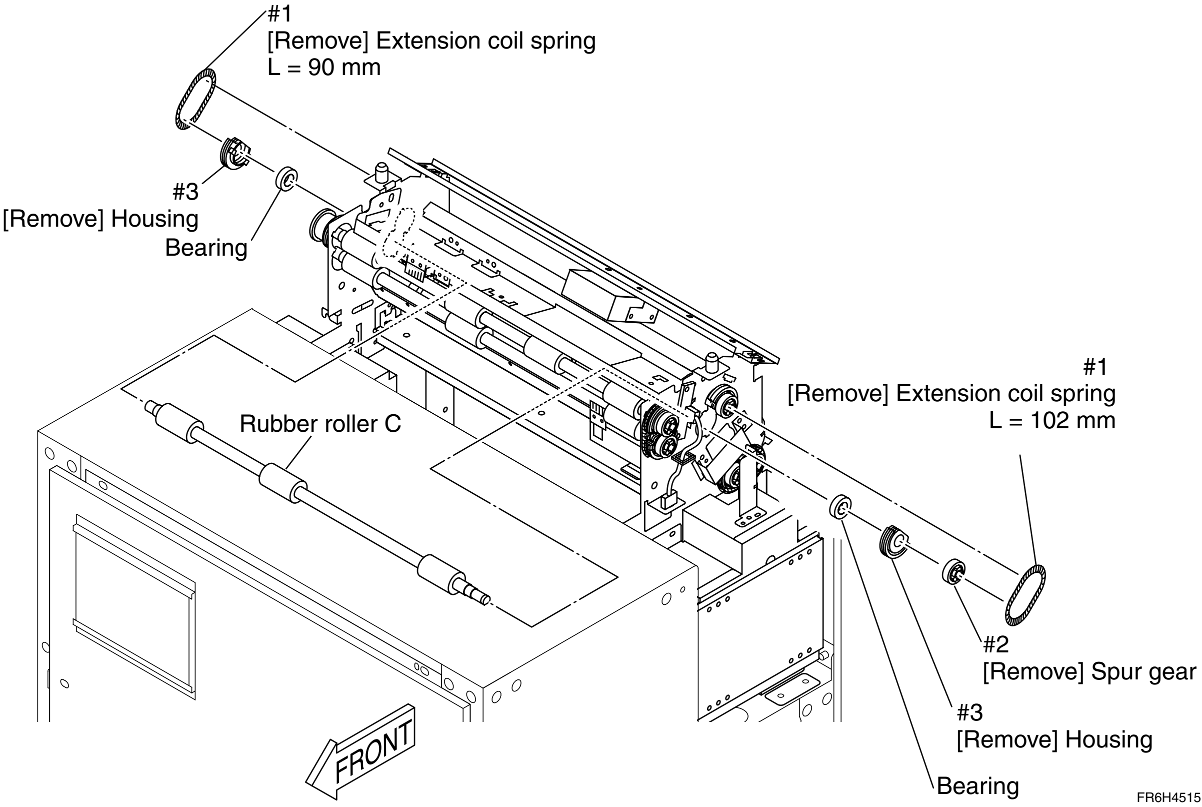
*To remove the rubber roller D, the rubber roller C should be removed first.*
*The rubber roller D cannot be removed alone.*

## ■ Removal Procedures

(1) Remove the timing belt.

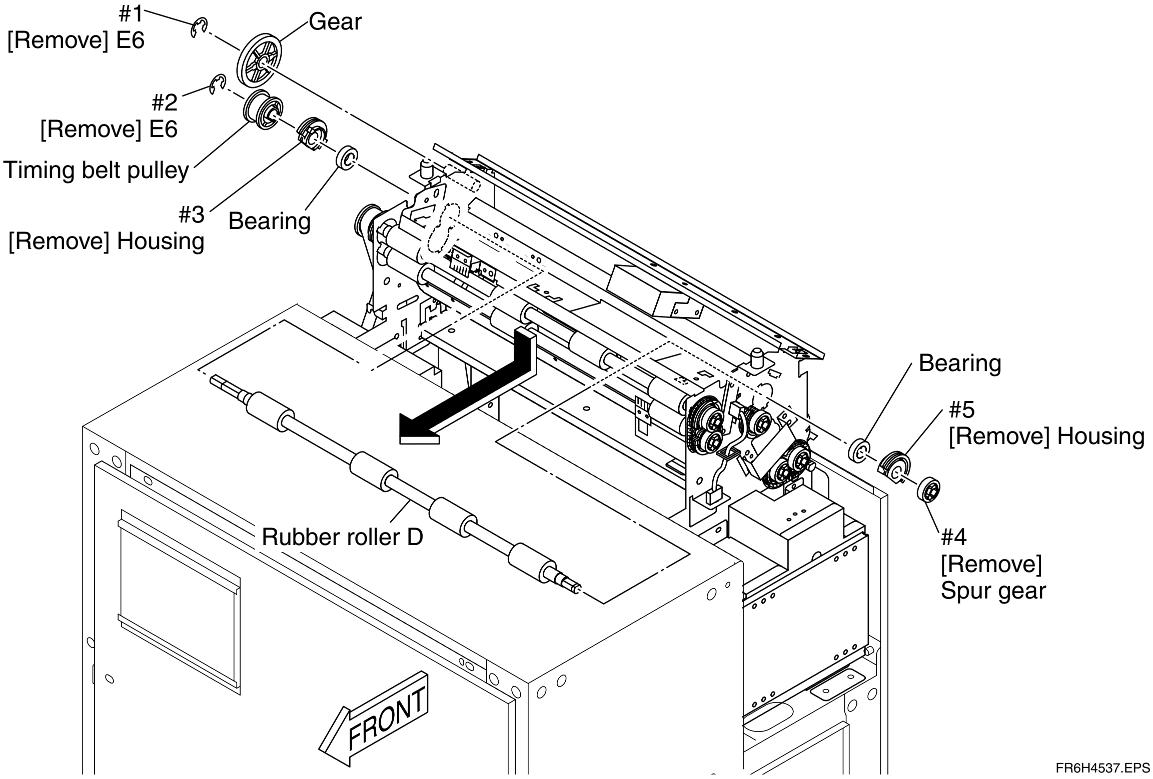
☞ “6.9 Timing Belt”

(2) Remove the rubber roller C.


#1
[Remove] Extension coil spring
L = 90 mm
#3
[Remove] Housing
Bearing
Rubber roller C
#1
[Remove] Extension coil spring
L = 102 mm
#2
[Remove] Spur gear
#3
[Remove] Housing
Bearing
FRONT

FR6H4515.EPS

(3) Remove the rubber roller D.


#1
[Remove] E6
Gear
#2
[Remove] E6
Timing belt pulley
#3
[Remove] Housing
Bearing
Bearing
#5
[Remove] Housing
#4
[Remove]
Spur gear
Rubber roller D
FRONT
FR6H4537.EPS

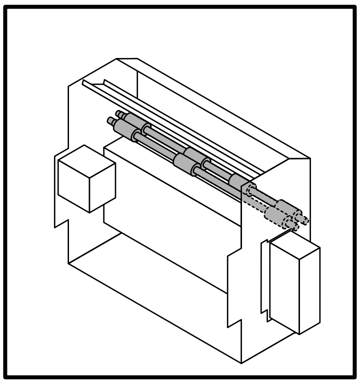
## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*The extension coil springs and rubber rollers differ in size depending on where they are attached. Use care not to confuse their locations.*

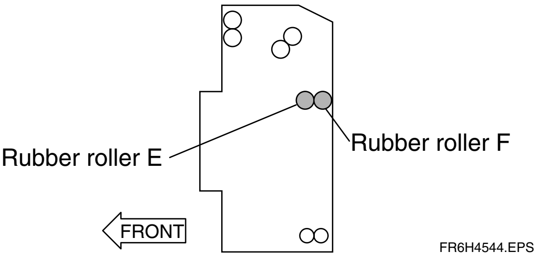
For reinstallation, reverse the removal steps.

# 6.13 Rubber Rollers E and F



FR6H4561.EPS

■ Rubber Roller Locations


Rubber roller E
Rubber roller F
FRONT
FR6H4544.EPS

◇ ***REFERENCE*** ◇

*To remove the rubber roller F, the rubber roller E should be removed first.*
*The rubber roller F cannot be removed alone.*

## ■ Removal Procedures

(1) Remove the lamp assembly.
☞ “6.2 Lamp Assembly”

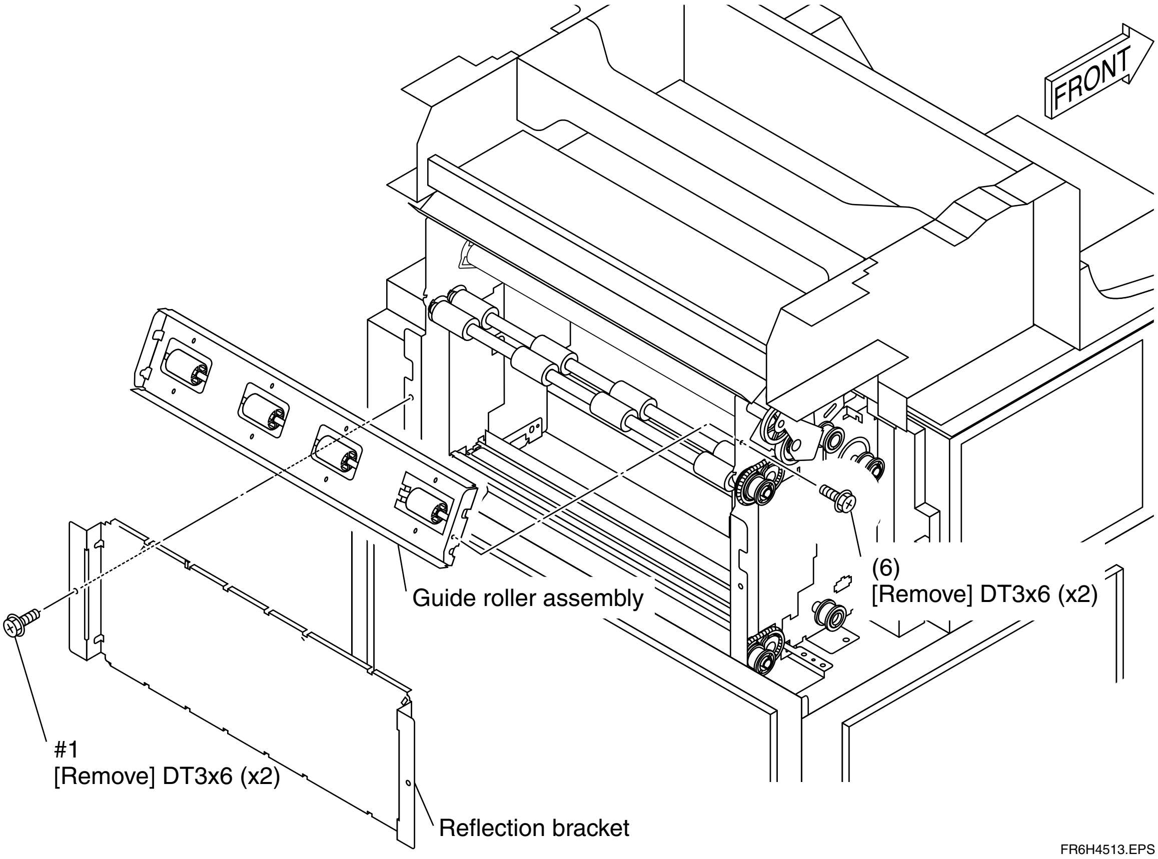
(2) Remove the duct box.
☞ “6.7 Duct Box”

(3) Loosen the timing belt.
☞ “6.9 Timing Belt”

(4) Remove the rear cover.
☞ “3.1 Removing and Reinstalling the Covers”

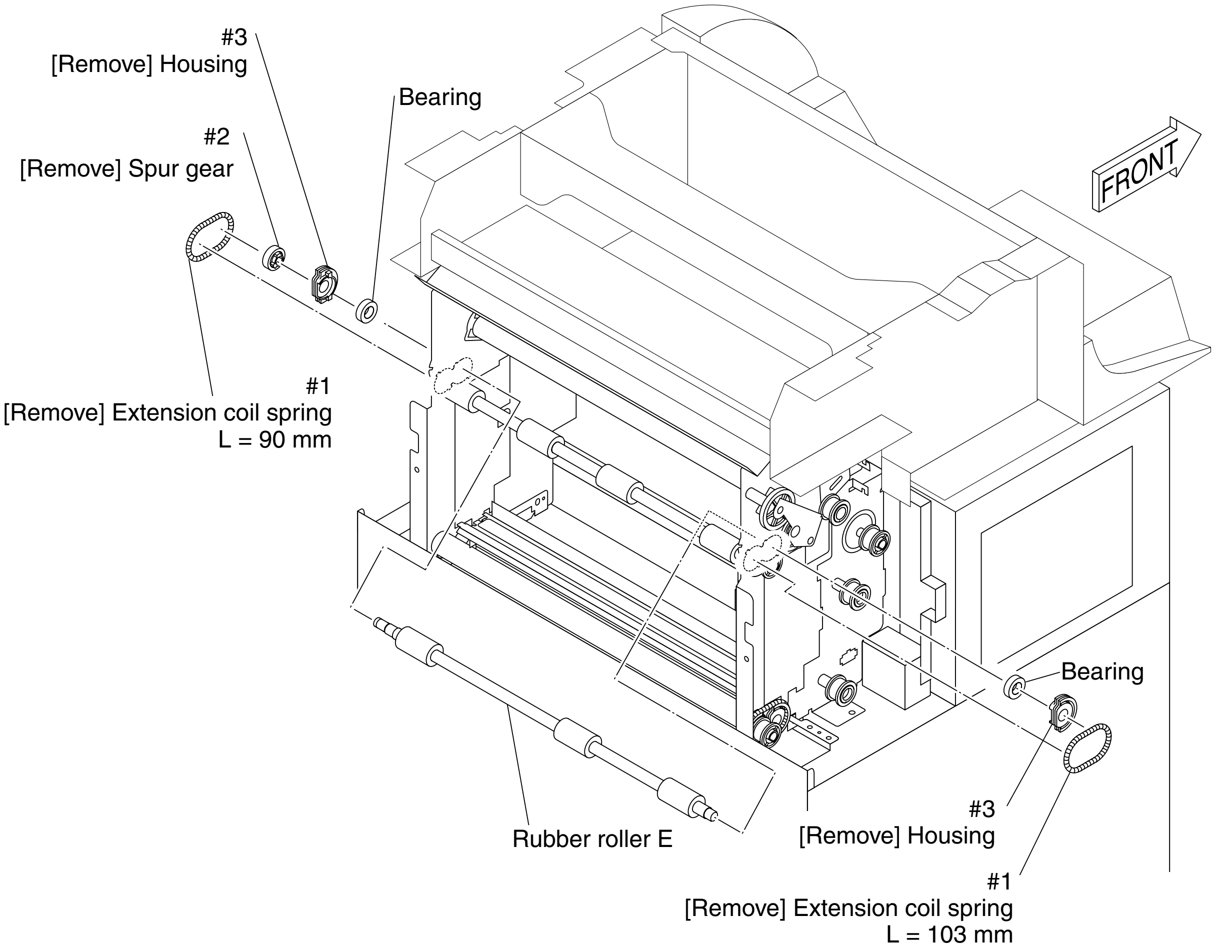
(5) Remove the reflection bracket.

(6) Remove the guide roller assembly.


FRONT
Guide roller assembly
(6)
[Remove] DT3x6 (x2)
#1
[Remove] DT3x6 (x2)
Reflection bracket

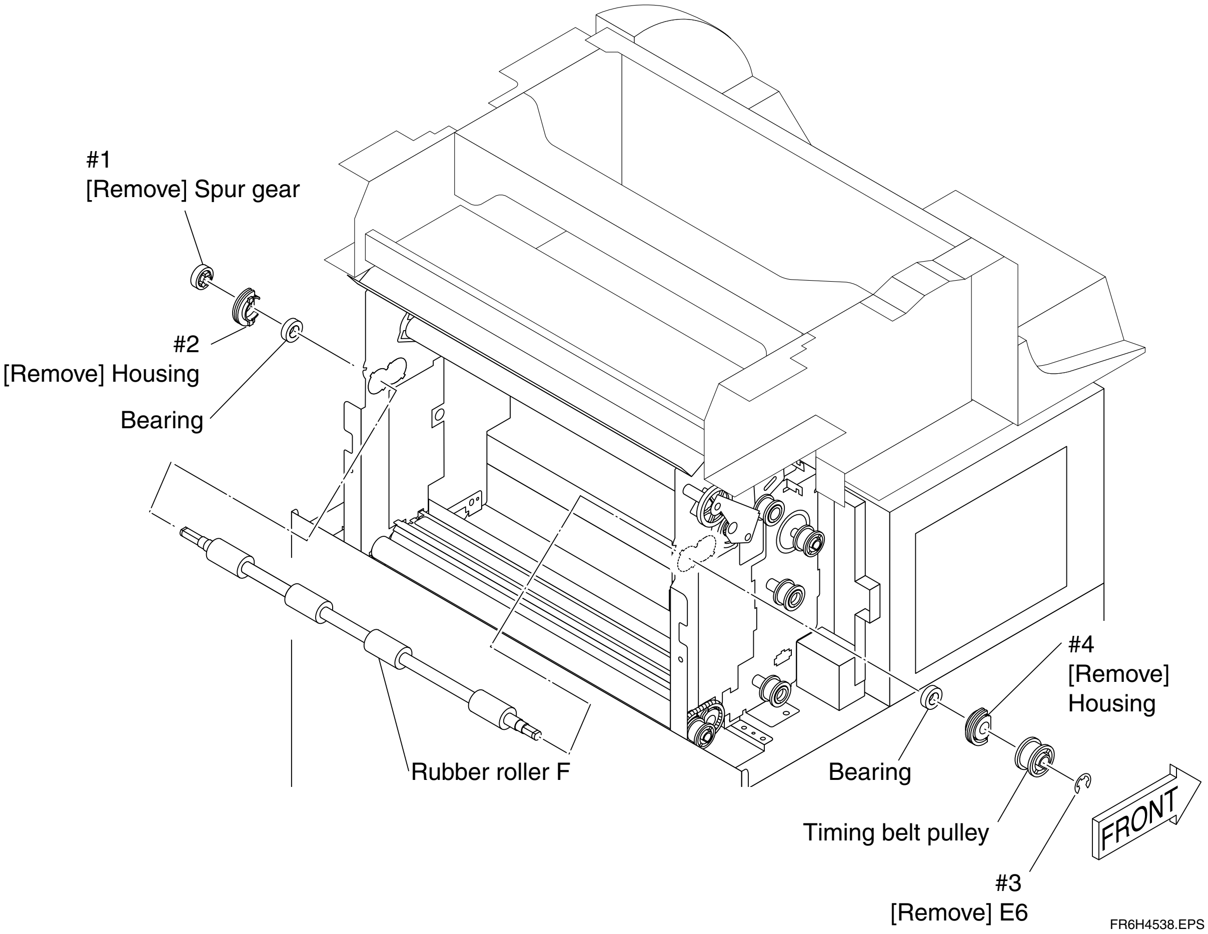
FR6H4513.EPS

(7) Remove the rubber roller E.


#3
[Remove] Housing
Bearing
#2
[Remove] Spur gear
FRONT
#1
[Remove] Extension coil spring
L = 90 mm
Bearing
Rubber roller E
#3
[Remove] Housing
#1
[Remove] Extension coil spring
L = 103 mm

FR6H4518.EPS

(8) Remove the rubber roller F.


#1
[Remove] Spur gear
#2
[Remove] Housing
Bearing
Rubber roller F
#4
[Remove]
Housing
Bearing
Timing belt pulley
#3
[Remove] E6
FRONT
FR6H4538.EPS

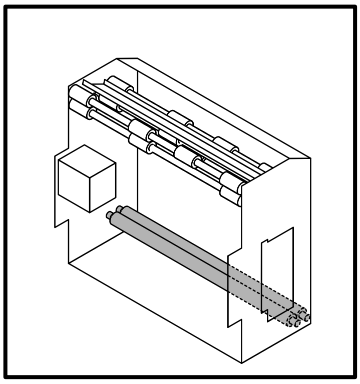
## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

**◆ *INSTRUCTION* ◆**

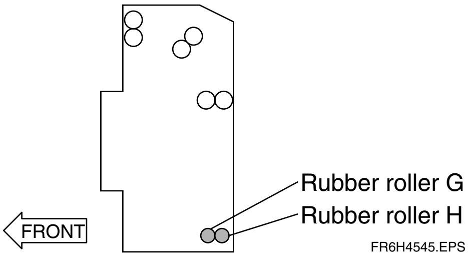
*The extension coil springs and rubber rollers differ in size depending on where they are attached. Use care not to confuse their locations.*

# 6.14 Rubber Rollers G and H



FR6H4562.EPS

■ Rubber Roller Locations


FRONT
Rubber roller G
Rubber roller H
FR6H4545.EPS

### ◇ *REFERENCE* ◇

*To remove the rubber roller H, the rubber roller G should be removed first.*
*The rubber roller H cannot be removed alone.*

## ■ Removal Procedures

(1) Remove the lamp assembly.

☞ "6.2 Lamp Assembly"

(2) Remove the duct box.

☞ "6.7 Duct Box"

(3) Loosen the timing belt.

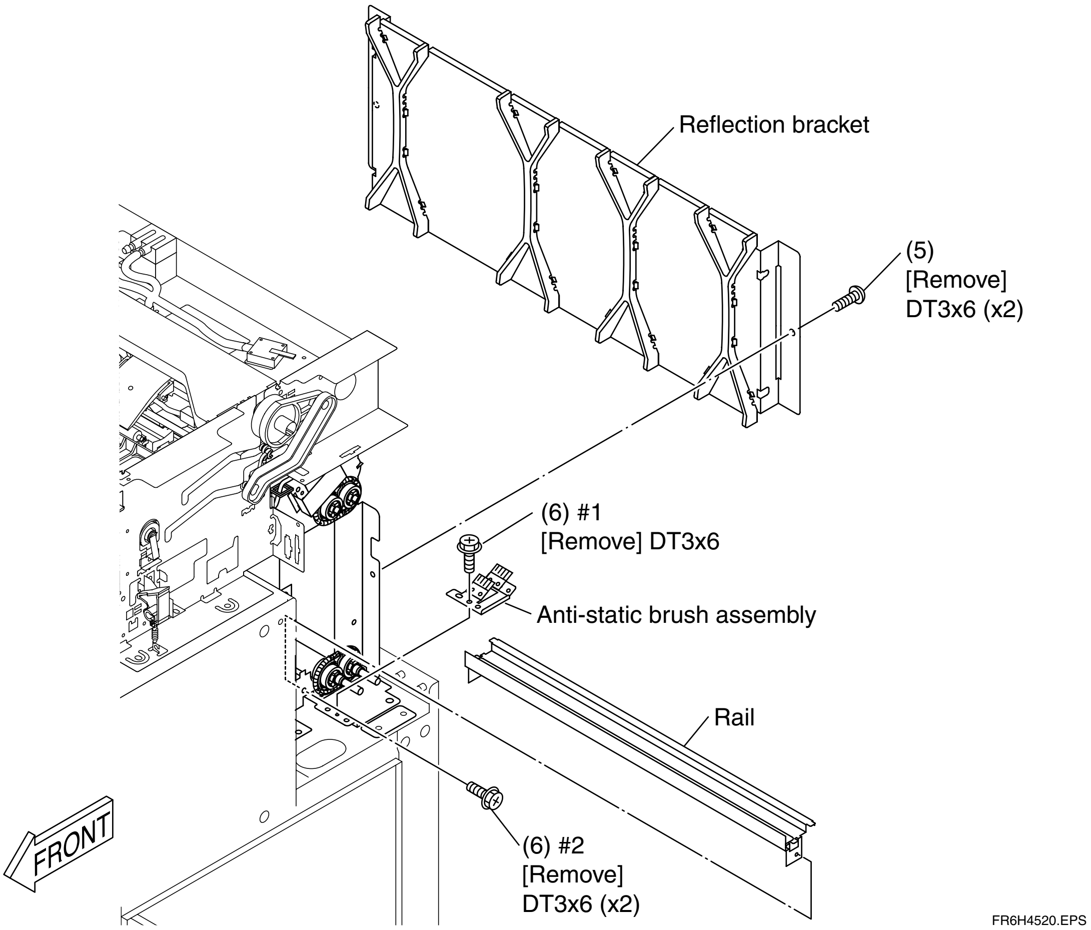
☞ "6.9 Timing Belt"

(4) Remove the rear cover.

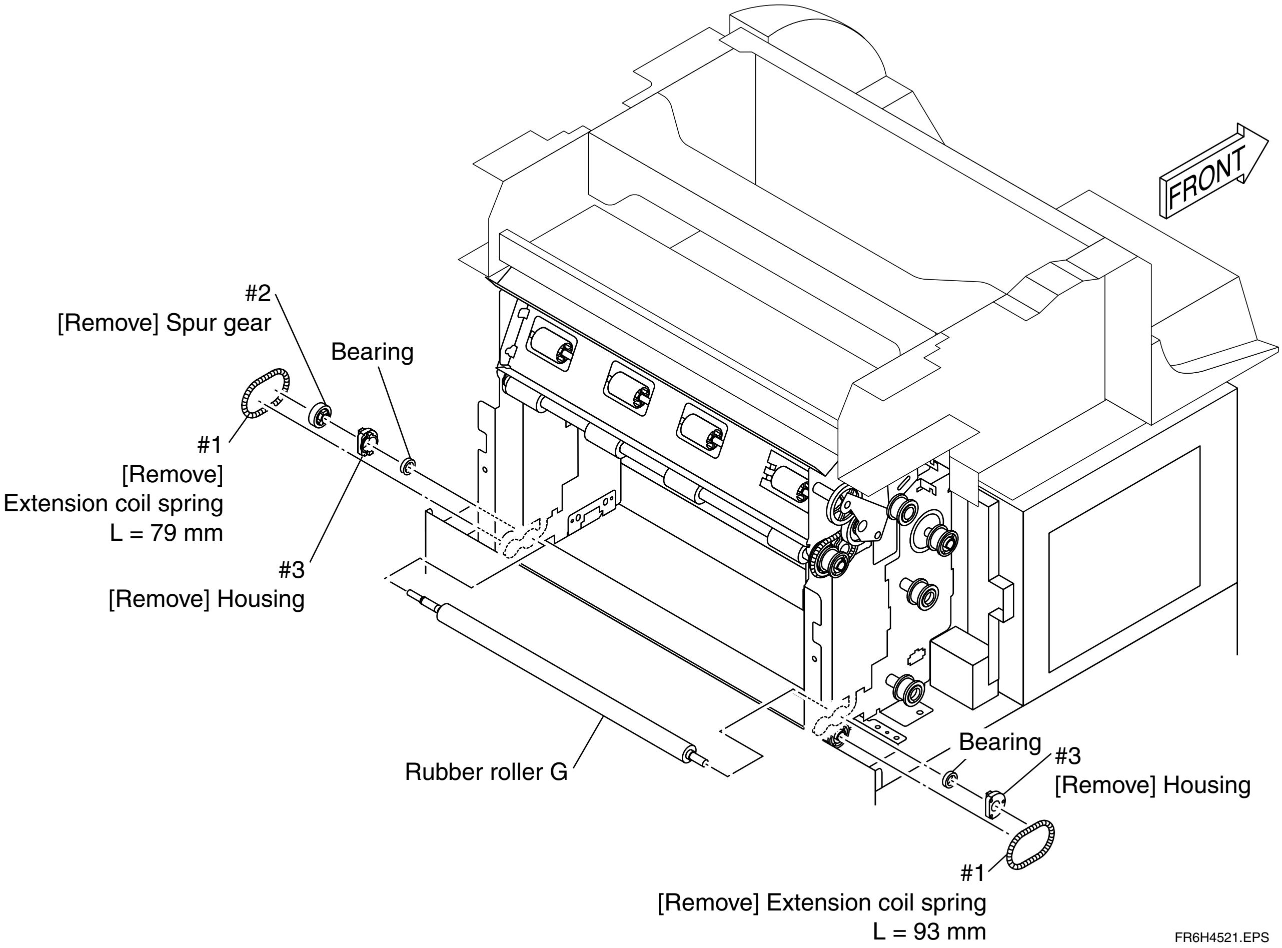
☞ "3.1 Removing and Reinstalling the Covers"

(5) Remove the reflection bracket.

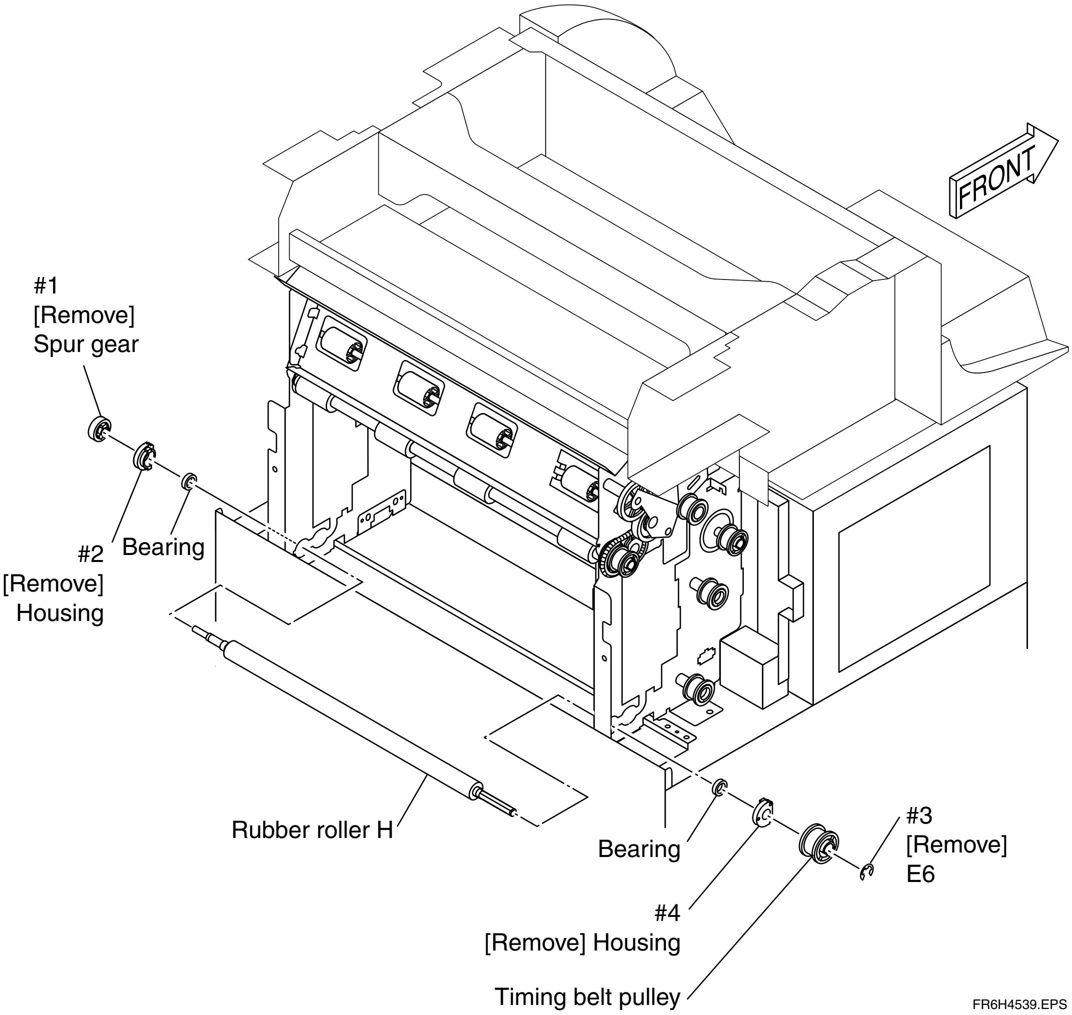
(6) Remove the rail.


Reflection bracket
(5)
[Remove]
DT3x6 (x2)
(6) #1
[Remove] DT3x6
Anti-static brush assembly
Rail
FRONT
(6) #2
[Remove]
DT3x6 (x2)
FR6H4520.EPS

(7) Remove the rubber roller G.


FRONT
#2
[Remove] Spur gear
Bearing
#1
[Remove]
Extension coil spring
L = 79 mm
#3
[Remove] Housing
Rubber roller G
Bearing
#3
[Remove] Housing
#1
[Remove] Extension coil spring
L = 93 mm
FR6H4521.EPS

(8) Remove the rubber roller H.


#1
[Remove]
Spur gear
#2
[Remove]
Housing
Bearing
FRONT
Rubber roller H
Bearing
#3
[Remove]
E6
#4
[Remove] Housing
Timing belt pulley
FR6H4539.EPS

## ■ Reinstallation Procedures

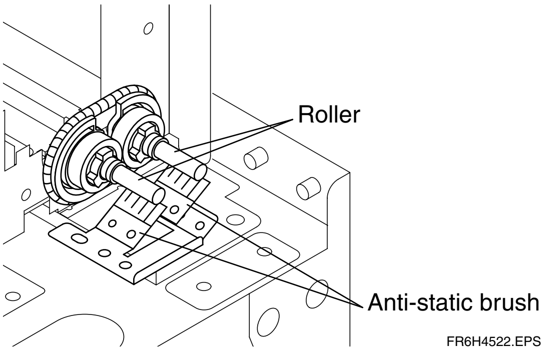
For reinstallation, reverse the removal steps.

**◆ *INSTRUCTION* ◆**

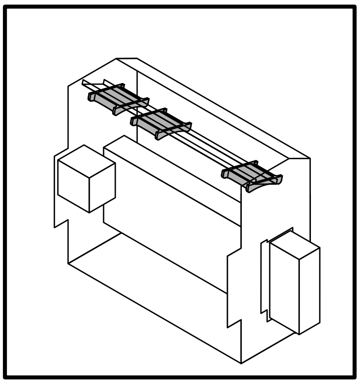
*The extension coil springs and rubber rollers differ in size depending on where they are attached. Use care not to confuse their locations.*

## ■ Check/Adjustment Procedures

- Make sure that the anti-static brush is brought into contact with the roller.

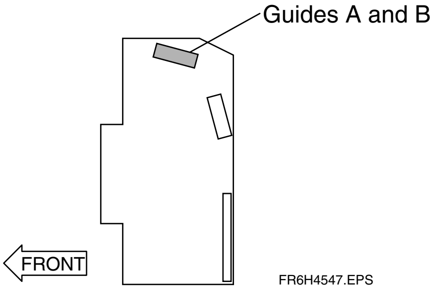

Roller
Anti-static brush
FR6H4522.EPS

# 6.15 Guides A and B



FR6H4564.EPS

■ Guide Locations


Guides A and B
FRONT

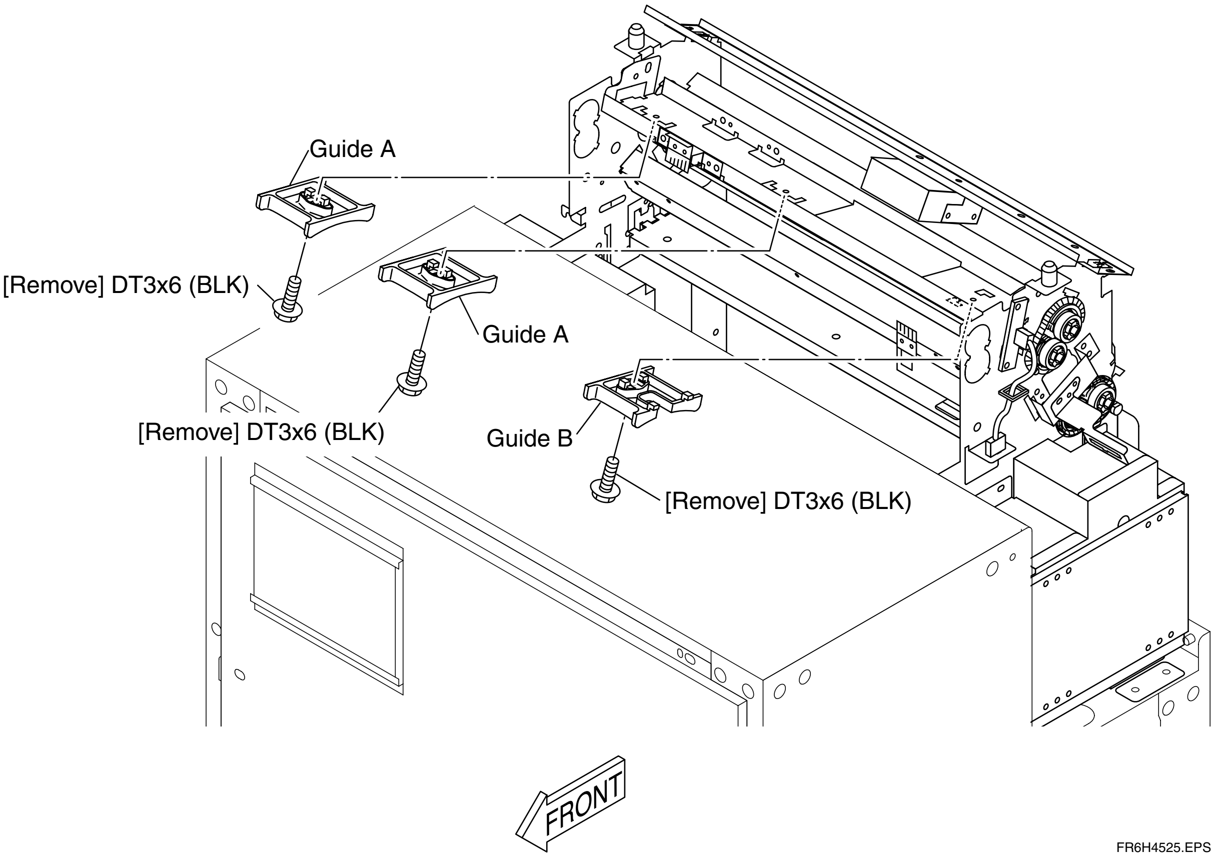
FR6H4547.EPS

## ■ Removal Procedures

(1) Remove the rubber rollers A and B.

☞ “6.11 Rubber Rollers A and B”

(2) Remove the guides A and B.


Guide A
[Remove] DT3x6 (BLK)
Guide A
[Remove] DT3x6 (BLK)
Guide B
[Remove] DT3x6 (BLK)
FRONT

FR6H4525.EPS

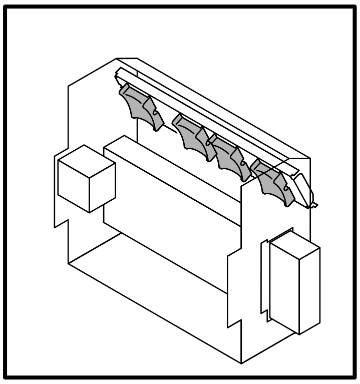
## ■ Reinstallation Procedures

**◆ *NOTE* ◆**

*The guides A and B differ in shape.*
*When attaching them, use care not to confuse their locations.*

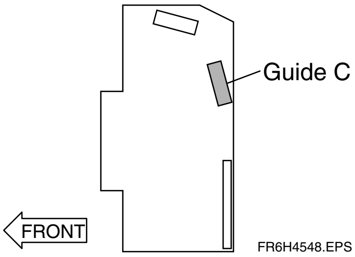
For reinstallation, reverse the removal steps.

## 6.16 Guide C



FR6H4565.EPS

■ Guide Locations


Guide C
FRONT
FR6H4548.EPS

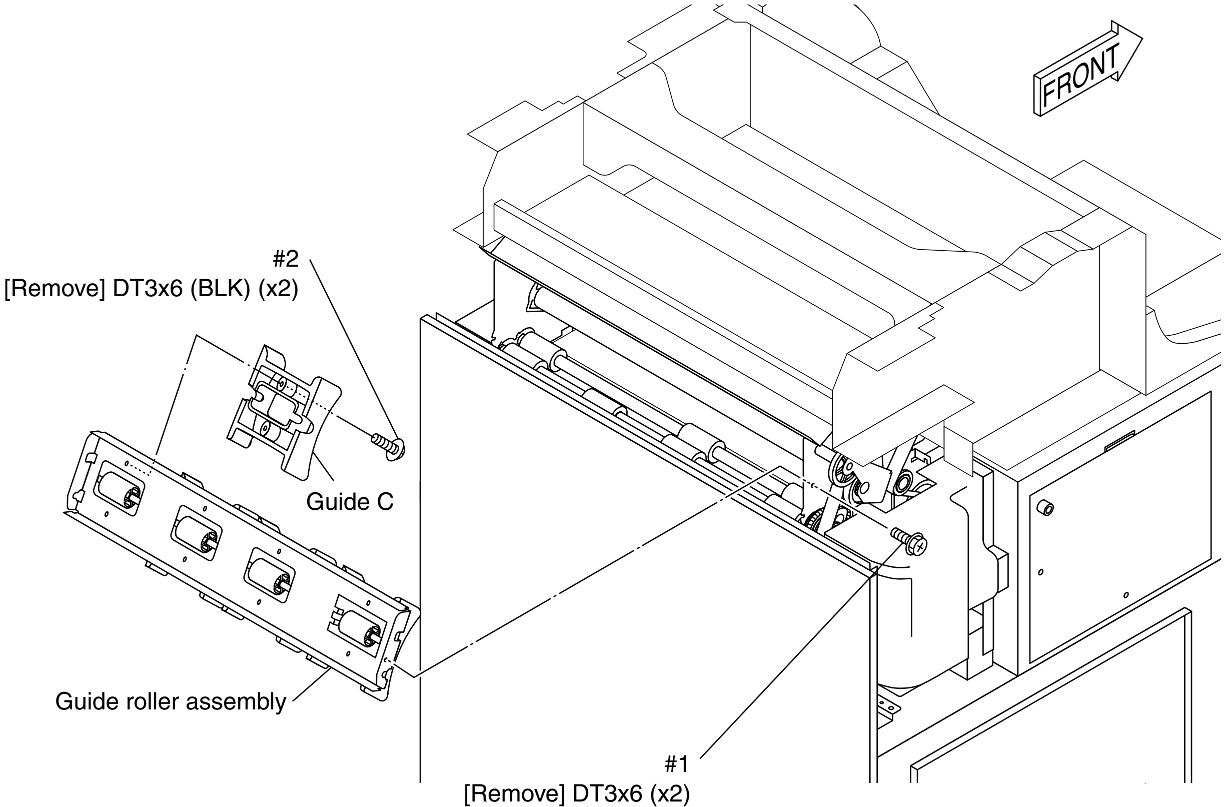
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top cover

☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the guide C.

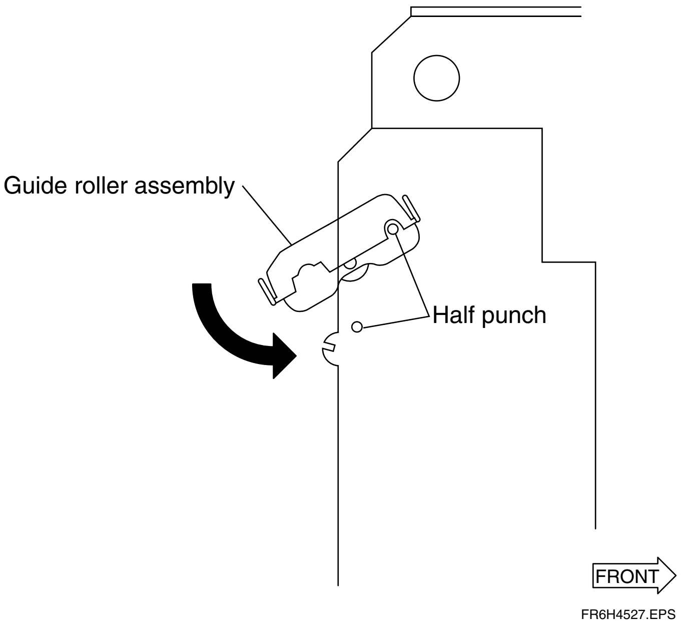

FRONT
#2
[Remove] DT3x6 (BLK) (x2)
Guide C
Guide roller assembly
#1
[Remove] DT3x6 (x2)

FR6H4526.EPS

## ■ Reinstallation Procedures

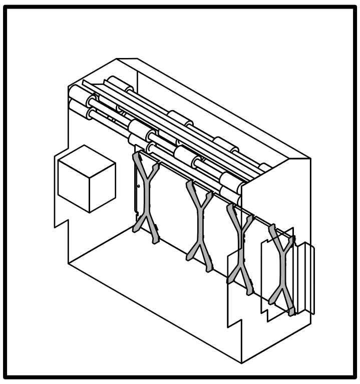
**◆ *NOTE* ◆**

*The guide roller assembly should be installed as illustrated below.*


Guide roller assembly
Half punch
FRONT
FR6H4527.EPS

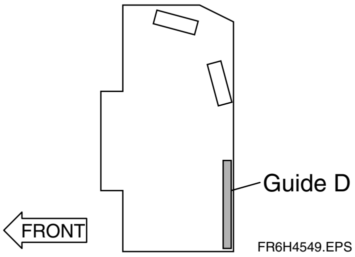
For reinstallation, reverse the removal steps.

## 6.17 Guide D



FR6H4566.EPS

■ Guide Locations


Guide D
FRONT
FR6H4549.EPS

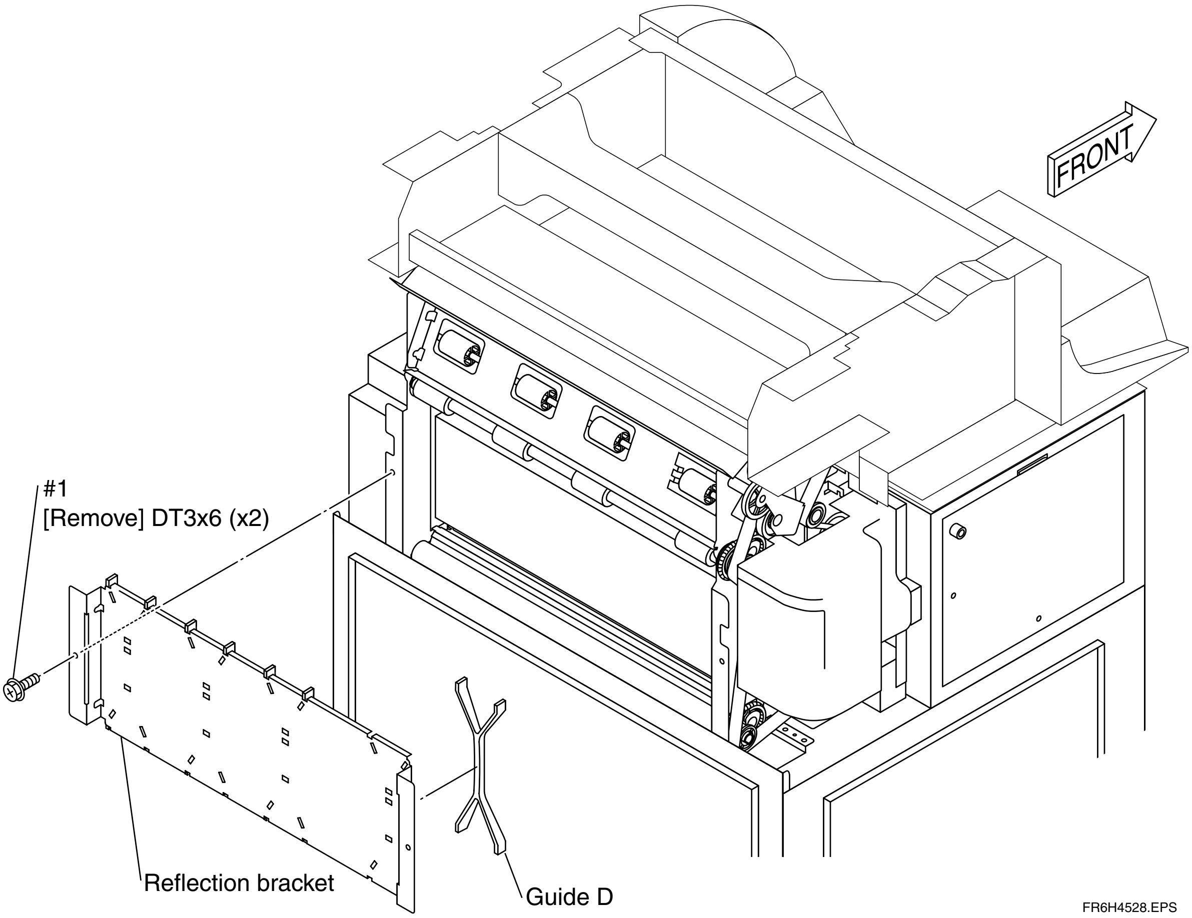
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Right- and left-hand side covers
- Top cover
- Rear cover

☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the guide D.


FRONT
#1
[Remove] DT3x6 (x2)
Reflection bracket
Guide D

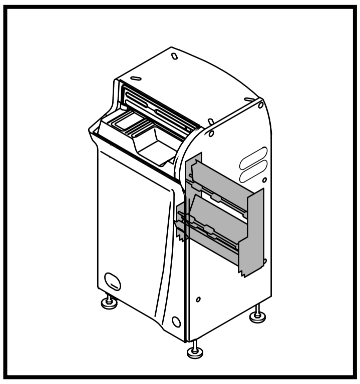
FR6H4528.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 7. Removing and Reinstalling the Side-Positioning Conveyor

## 7.1 Side-Positioning Conveyor



FR6H4651.EPS

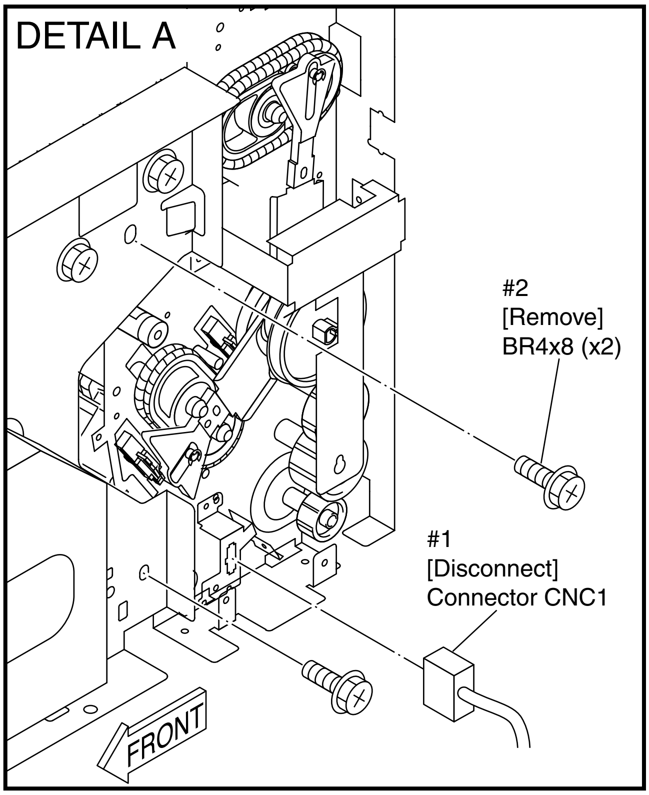
### ■ Removal Procedures

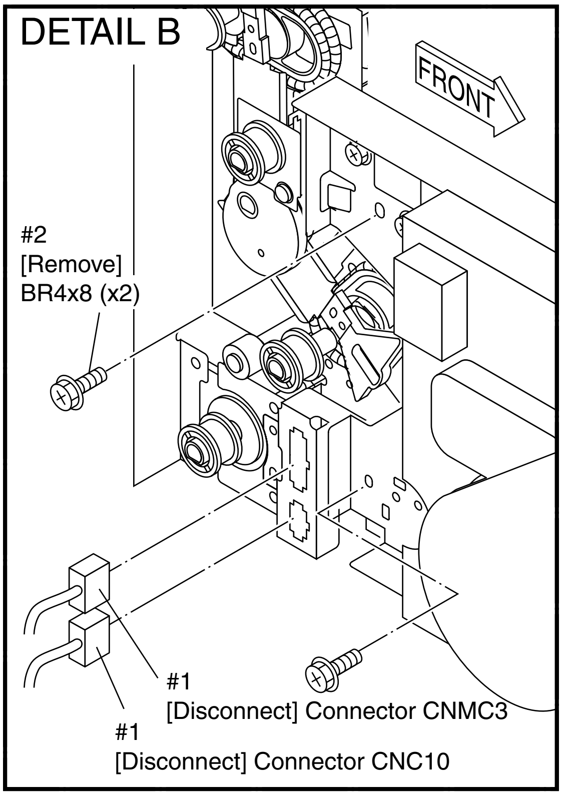
(1) Remove the covers.

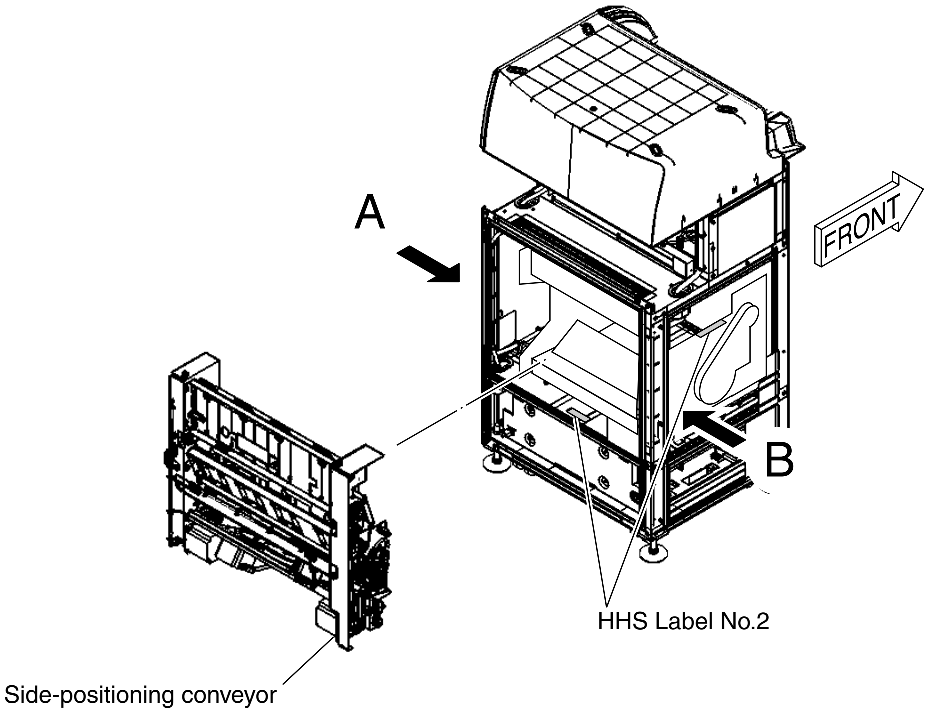
- Front cover
- Right-hand side cover
- Left-hand side cover
- Rear cover

☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the side-positioning conveyor.


DETAIL A
#2
[Remove]
BR4x8 (x2)
#1
[Disconnect]
Connector CNC1
FRONT


DETAIL B
FRONT
#2
[Remove]
BR4x8 (x2)
#1
[Disconnect] Connector CNMC3
#1
[Disconnect] Connector CNC10

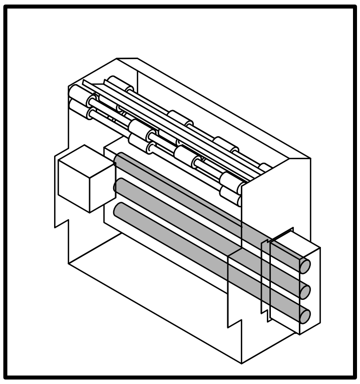

A
FRONT
B
HHS Label No.2
Side-positioning conveyor

FR6H4601.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 7.2 Timing Belt



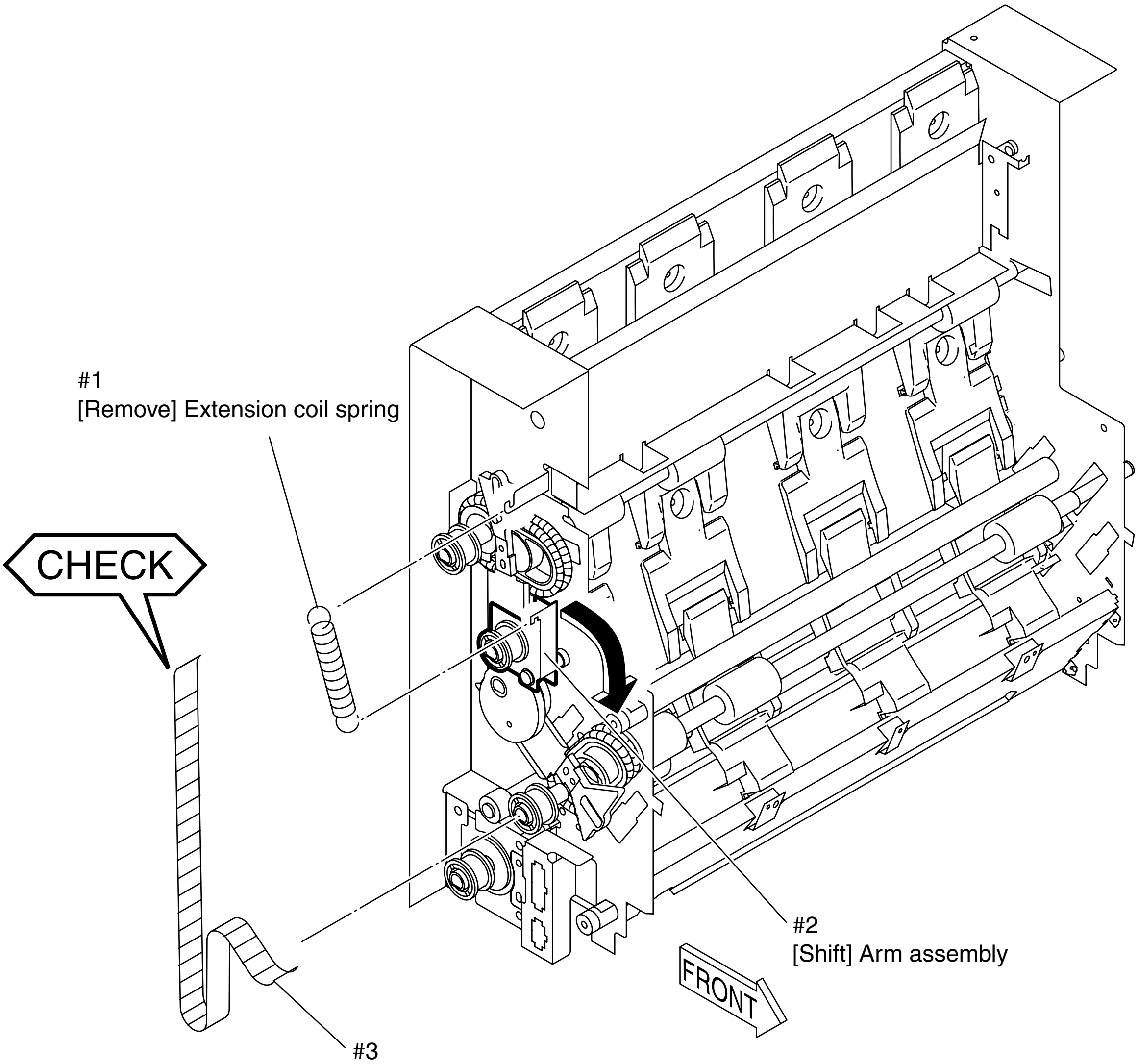
FR6H4552.EPS

### ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ "7.1 Side-Positioning Conveyor"

(2) Remove the timing belt.


#1
[Remove] Extension coil spring
CHECK
#2
[Shift] Arm assembly
FRONT
#3
[Remove] Timing belt

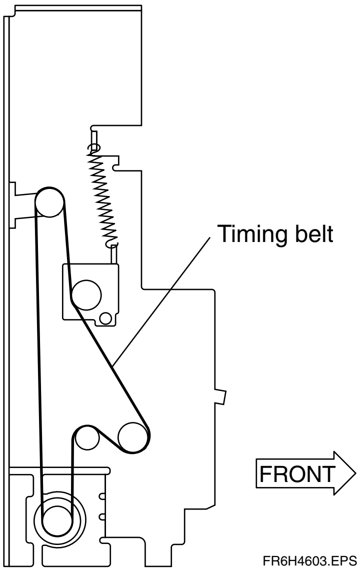
FR6H4602.EPS

## ■ Reinstallation Procedures

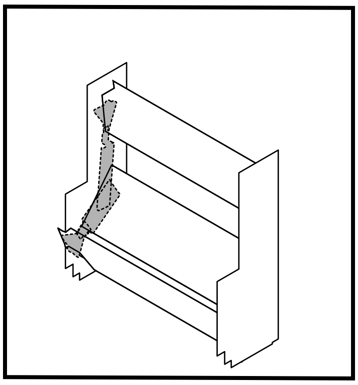
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Check the mounting position of the timing belt.

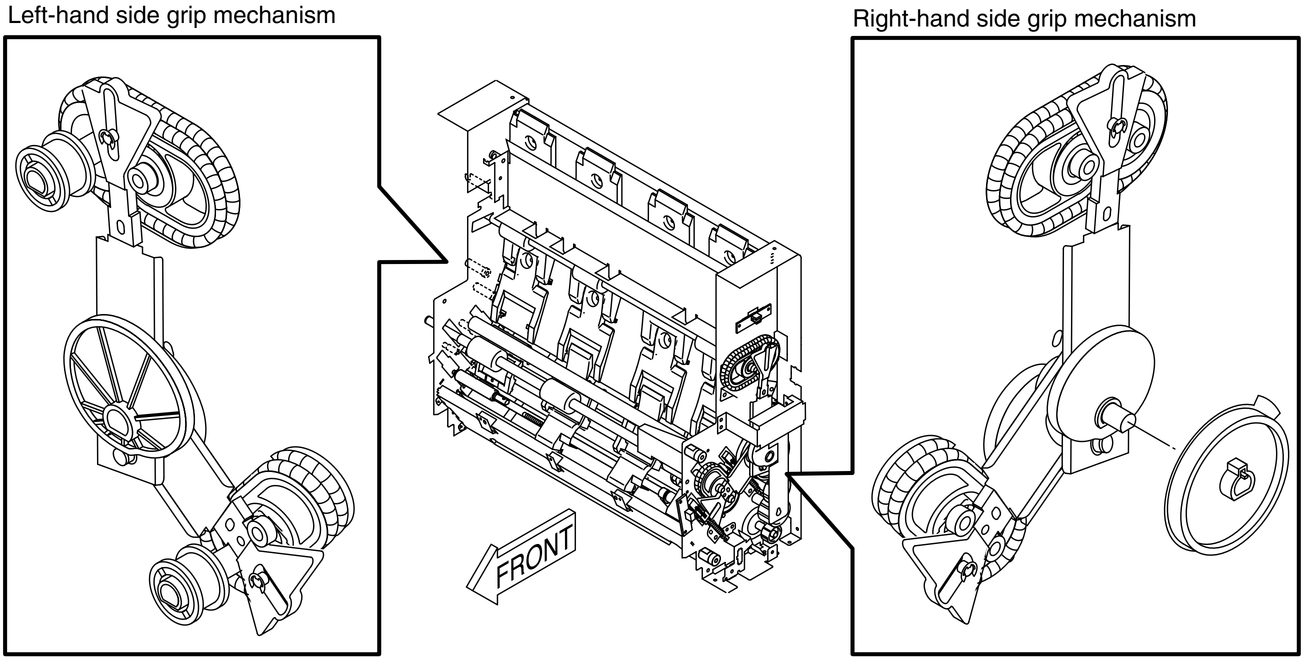

Timing belt
FRONT
FR6H4603.EPS

## 7.3 Grip Mechanism (Left-Hand Side)



FR6H4653.EPS

### ■ Grip Mechanism Locations


Left-hand side grip mechanism
Right-hand side grip mechanism
FRONT

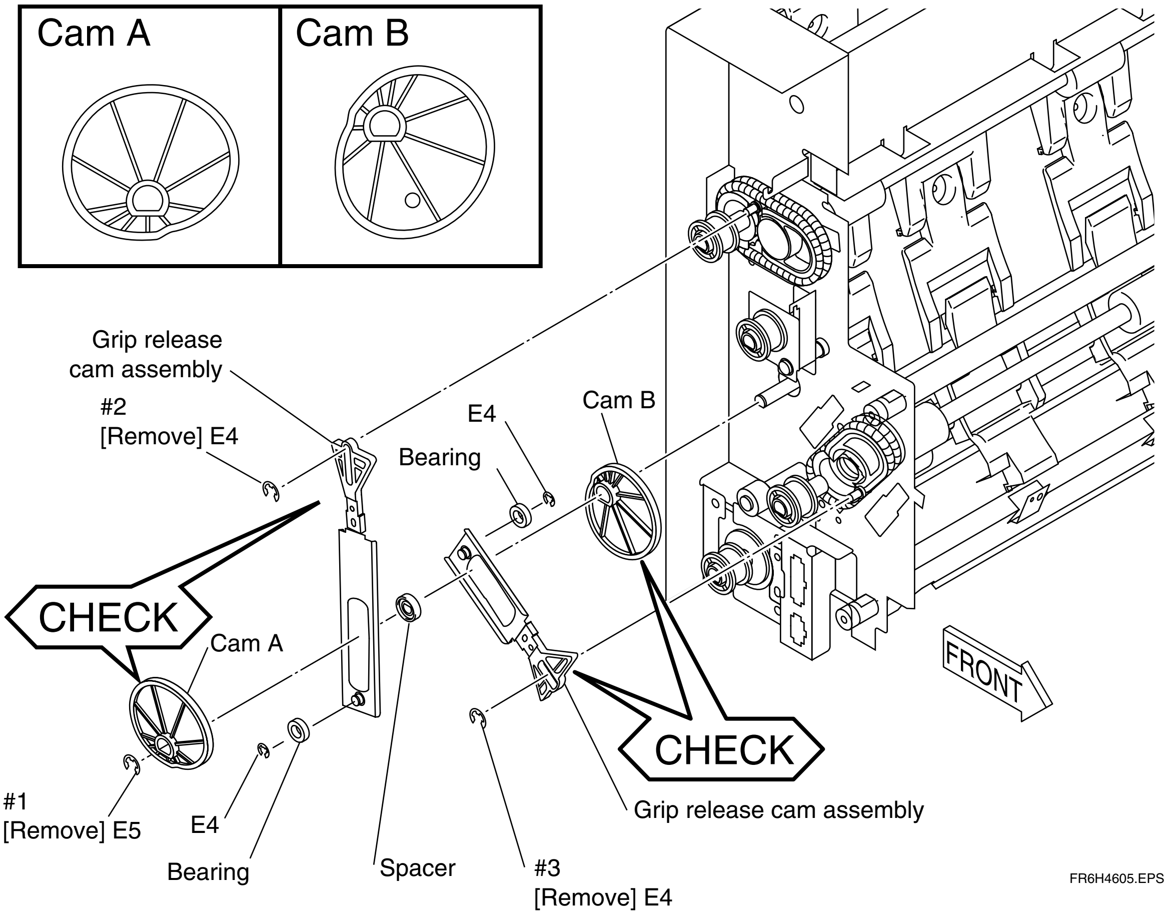
FR6H4604.EPS

### ■ Removal Procedures

(1) Remove the timing belt.

☞ “7.2 Timing Belt”

(2) Remove the grip release cam assembly.


Cam A
Cam B
Grip release cam assembly
#2 [Remove] E4
E4
Bearing
Cam B
CHECK
Cam A
CHECK
#1 [Remove] E5
E4
Bearing
Spacer
#3 [Remove] E4
Grip release cam assembly
FRONT
FR6H4605.EPS

## ■ Reinstallation Procedures

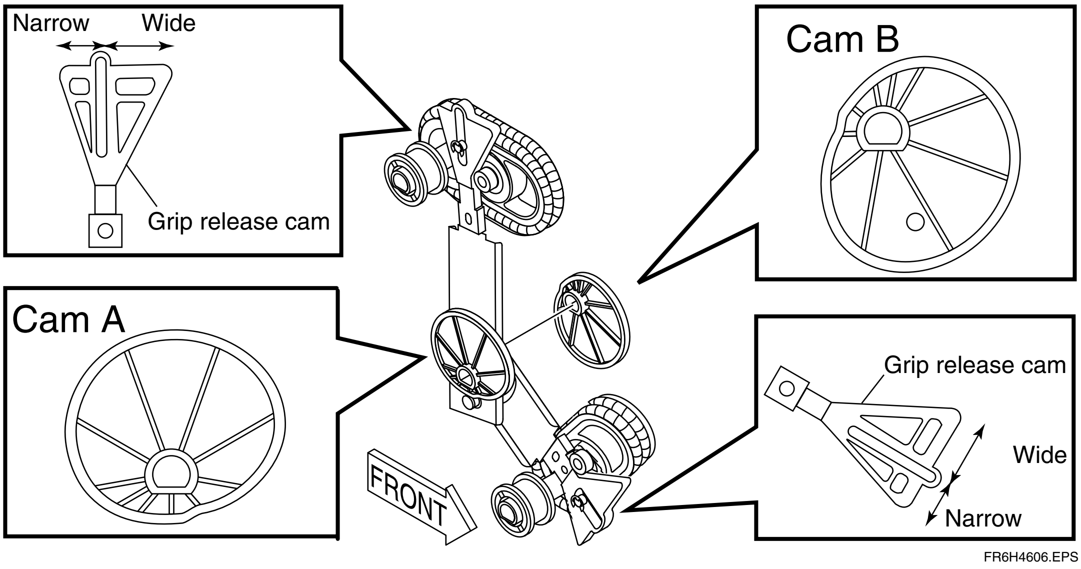
### ◆ *INSTRUCTION* ◆

*The cams differ in shape depending on where they are attached. When attaching the cams, use care not to confuse their locations.*

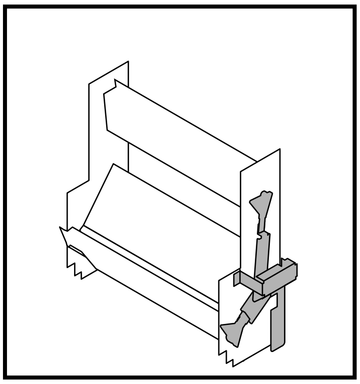
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the cams are attached correctly.


Narrow
Wide
Grip release cam
Cam B
Cam A
Grip release cam
Wide
Narrow
FRONT
FR6H4606.EPS

# 7.4 Grip Mechanism (Right-Hand Side)



FR6H4654.EPS

## ■ Grip Mechanism Locations

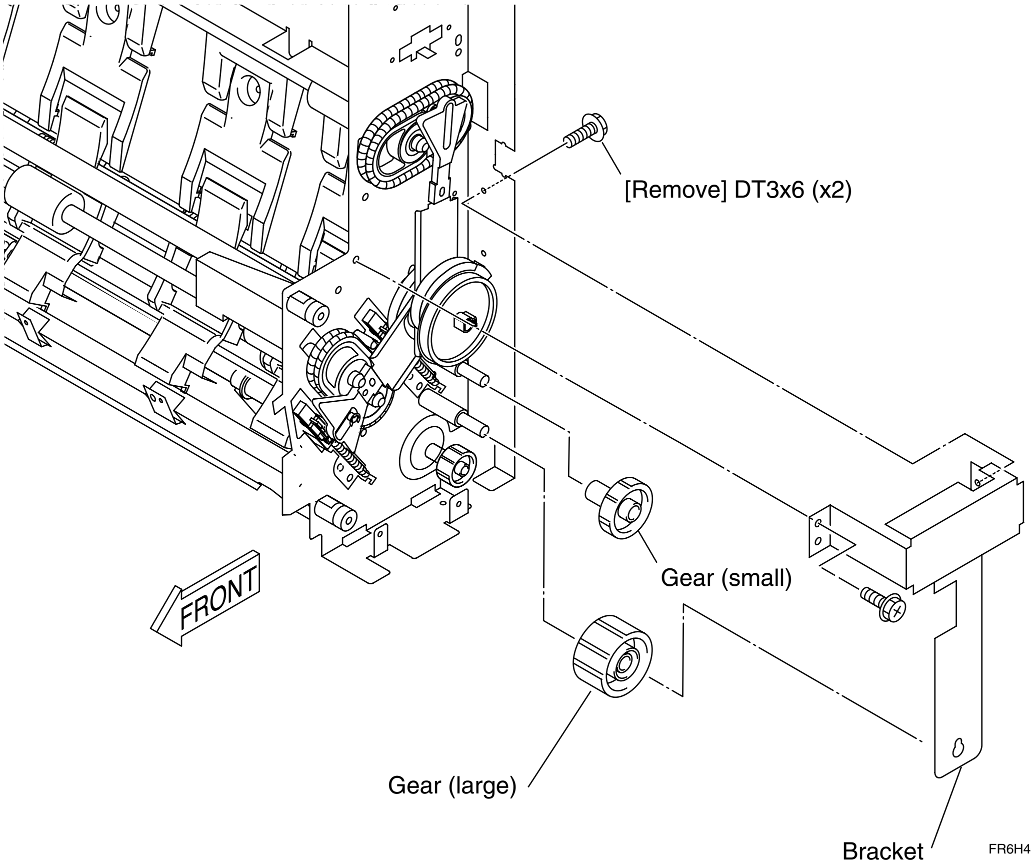
☞ “7.3 Grip Mechanism (Left-Hand Side)”

## ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ “7.1 Side-Positioning Conveyor”

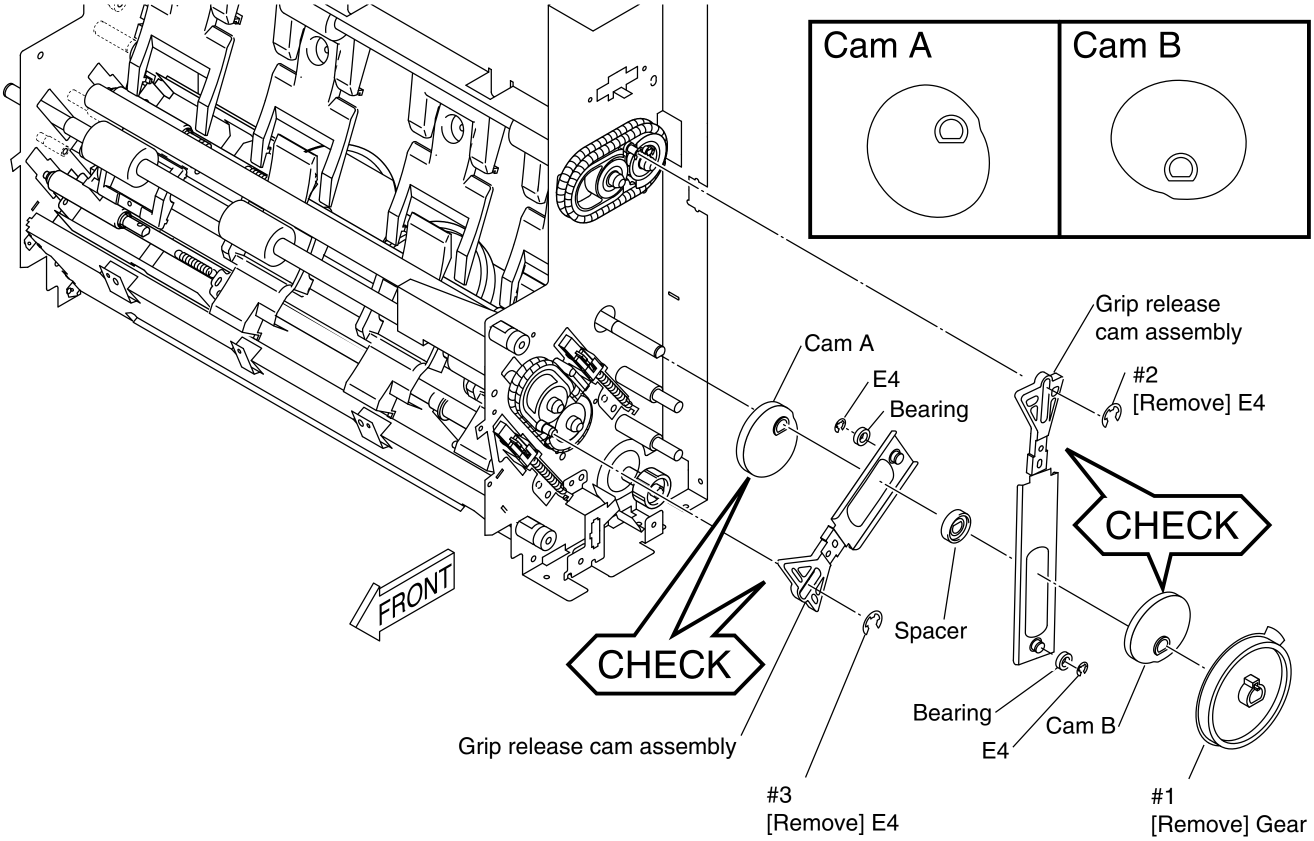
(2) Remove the bracket.



[Remove] DT3x6 (x2)
FRONT
Gear (small)
Gear (large)
Bracket

FR6H4607.EPS

(3) Remove the grip release cam assembly.


Cam A
Cam B
Grip release cam assembly
Cam A
E4
Bearing
#2
[Remove] E4
CHECK
FRONT
CHECK
Spacer
Bearing
Cam B
E4
Grip release cam assembly
#3
[Remove] E4
#1
[Remove] Gear

FR6H4608.EPS

## ■ Reinstallation Procedures

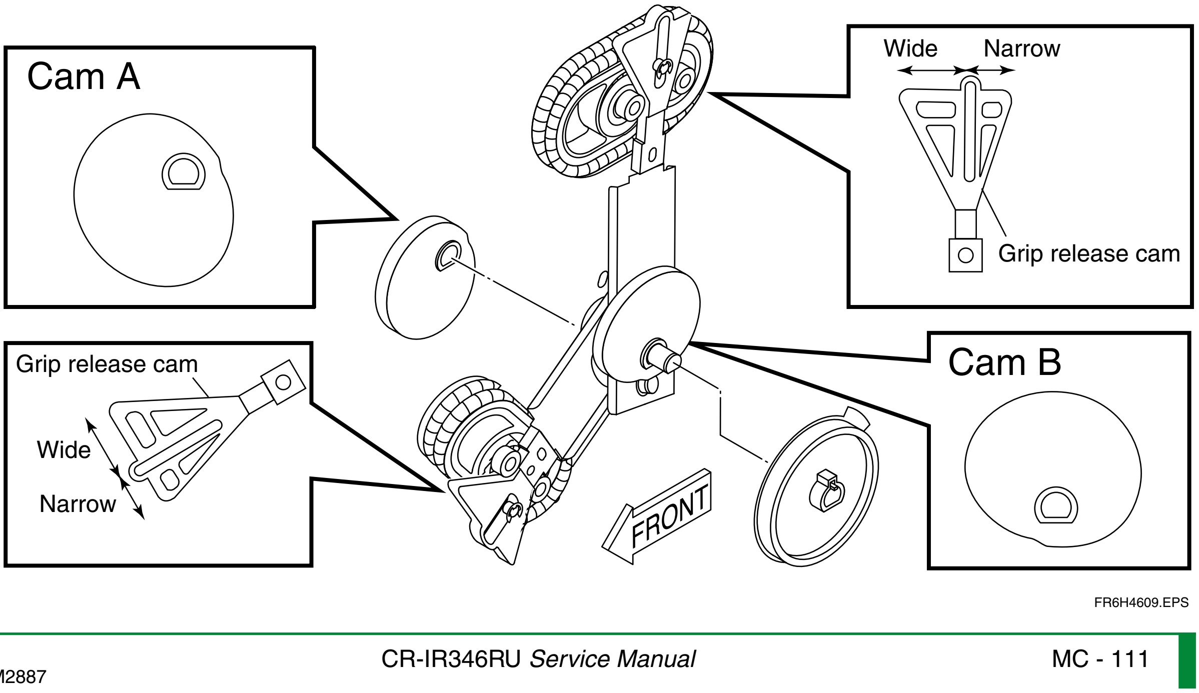
### ◆ *INSTRUCTION* ◆

*The cams differ in shape depending on where they are attached. When attaching the cams, use care not to confuse their locations.*

For reinstallation, reverse the removal steps.

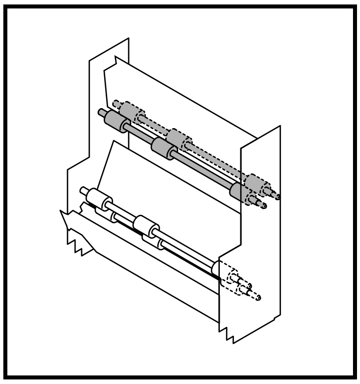
## ■ Check/Adjustment Procedures

- Make sure that the cams are attached correctly.


Cam A
Wide
Narrow
Grip release cam
Grip release cam
Wide
Narrow
Cam B
FRONT

FR6H4609.EPS

## 7.5 Upper Grip Roller



FR6H4655.EPS

### ■ Removal Procedures

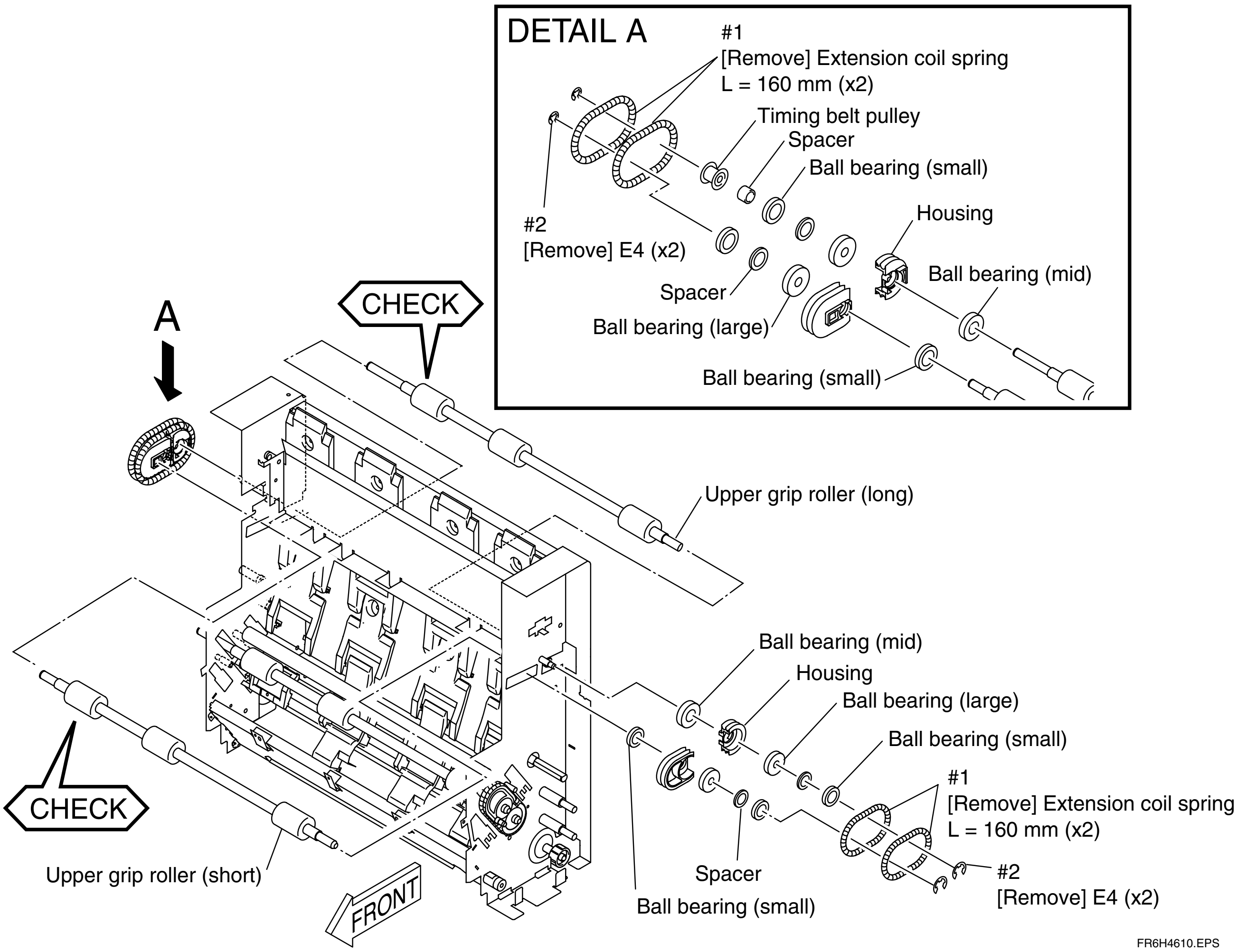
(1) Remove the grip mechanism (left-hand side).

☞ "7.3 Grip Mechanism (Left-Hand Side)"

(2) Remove the grip mechanism (right-hand side)

☞ "7.4 Grip Mechanism (Right-Hand Side)"

(3) Remove the upper grip roller (long) and upper grip roller (short).



DETAIL A
#1
[Remove] Extension coil spring
L = 160 mm (x2)
Timing belt pulley
Spacer
Ball bearing (small)
Housing
#2
[Remove] E4 (x2)
Ball bearing (mid)
Spacer
Ball bearing (large)
Ball bearing (small)
A
CHECK
Upper grip roller (long)
Ball bearing (mid)
Housing
Ball bearing (large)
Ball bearing (small)
#1
[Remove] Extension coil spring
L = 160 mm (x2)
CHECK
Upper grip roller (short)
Spacer
Ball bearing (small)
#2
[Remove] E4 (x2)
FRONT

FR6H4610.EPS

## ■ Reinstallation Procedures

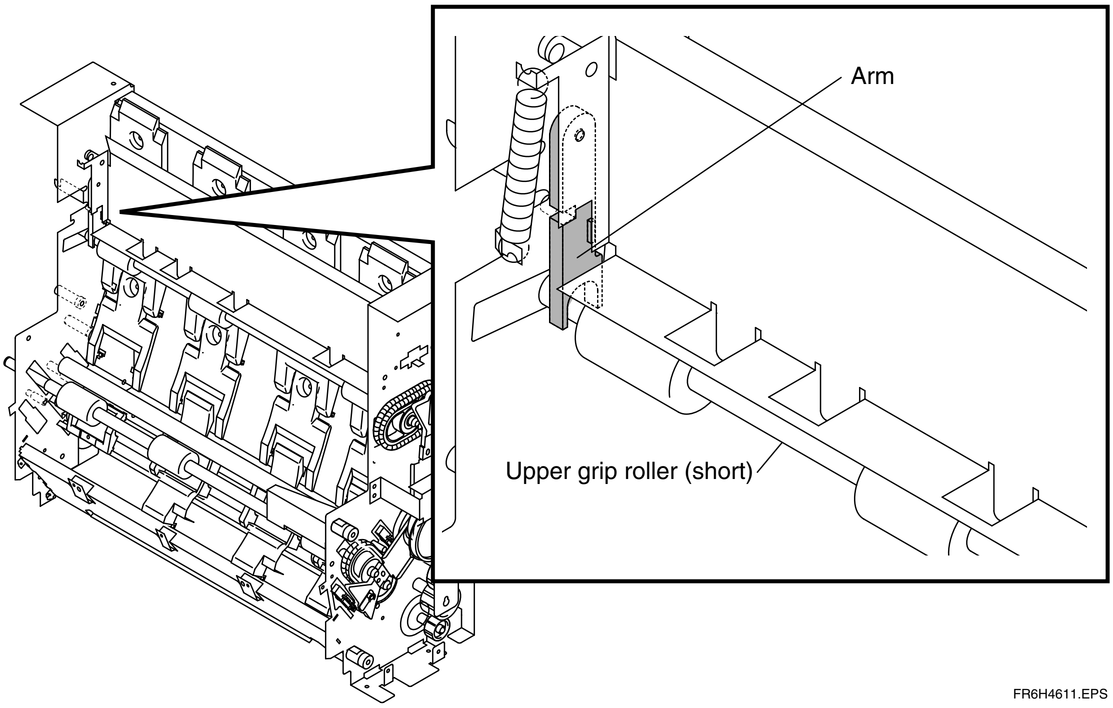
### ◆ *INSTRUCTION* ◆

*The upper grip rollers differ in length depending on where they are attached. When attaching the upper grip rollers, use care not to confuse their locations.*

For reinstallation, reverse the removal steps.

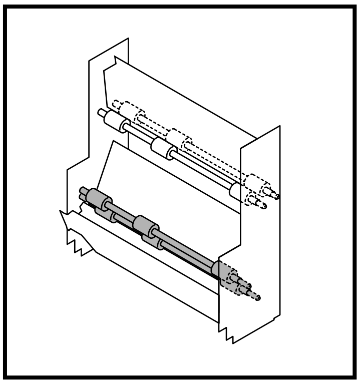
## ■ Check/Adjustment Procedures

- Check the attachment locations of the upper grip rollers.
- Make sure that the upper grip roller (short) is fitted into the notch of the arm.



FR6H4611.EPS

# 7.6 Lower Grip Roller



FR6H4656.EPS

## ■ Removal Procedures

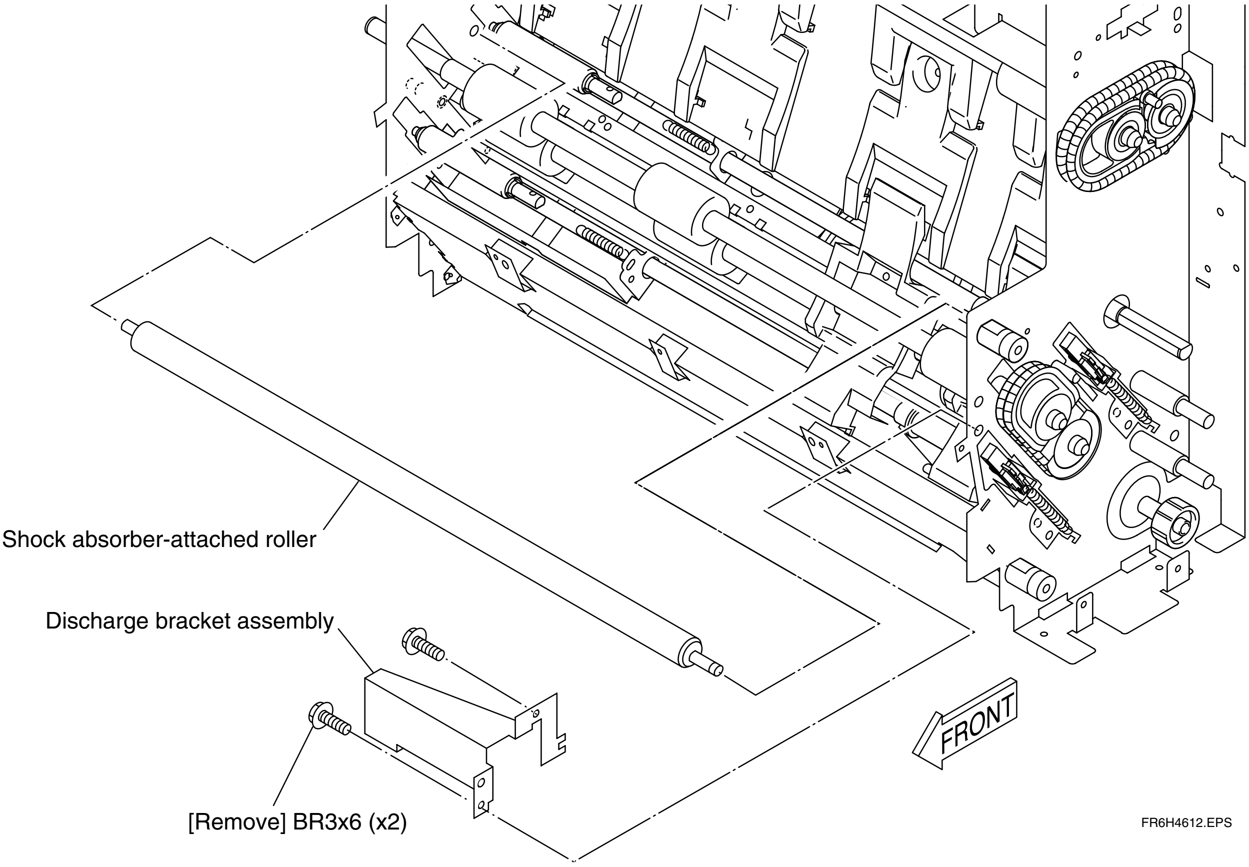
(1) Remove the grip mechanism (left-hand side).

☞ "7.3 Grip Mechanism (Left-Hand Side)"

(2) Remove the grip mechanism (right-hand side)

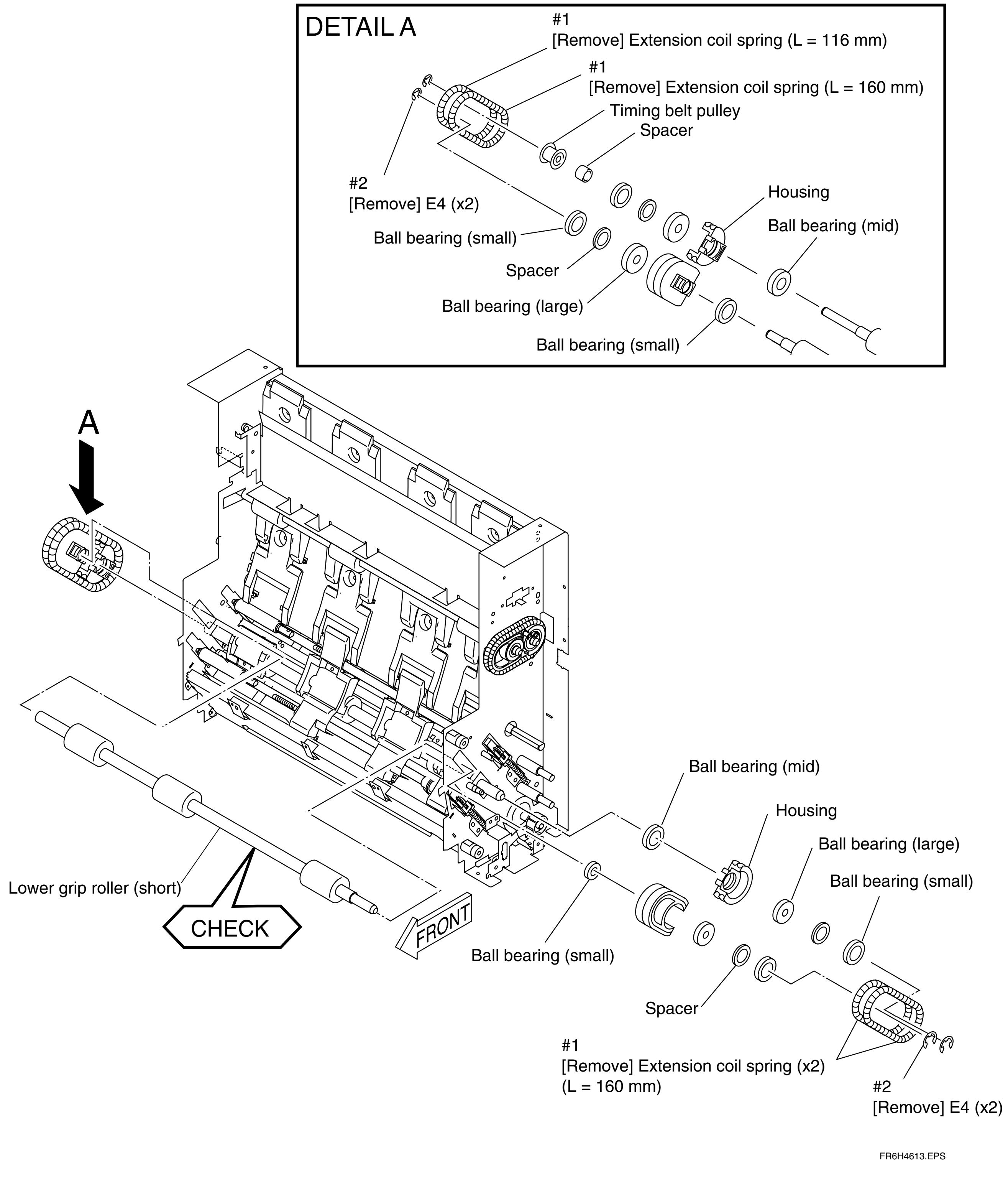
☞ "7.4 Grip Mechanism (Right-Hand Side)"

(3) Remove the shock absorber-attached roller.


Shock absorber-attached roller
Discharge bracket assembly
[Remove] BR3x6 (x2)
FRONT

FR6H4612.EPS

(4) Remove the lower grip roller (short).

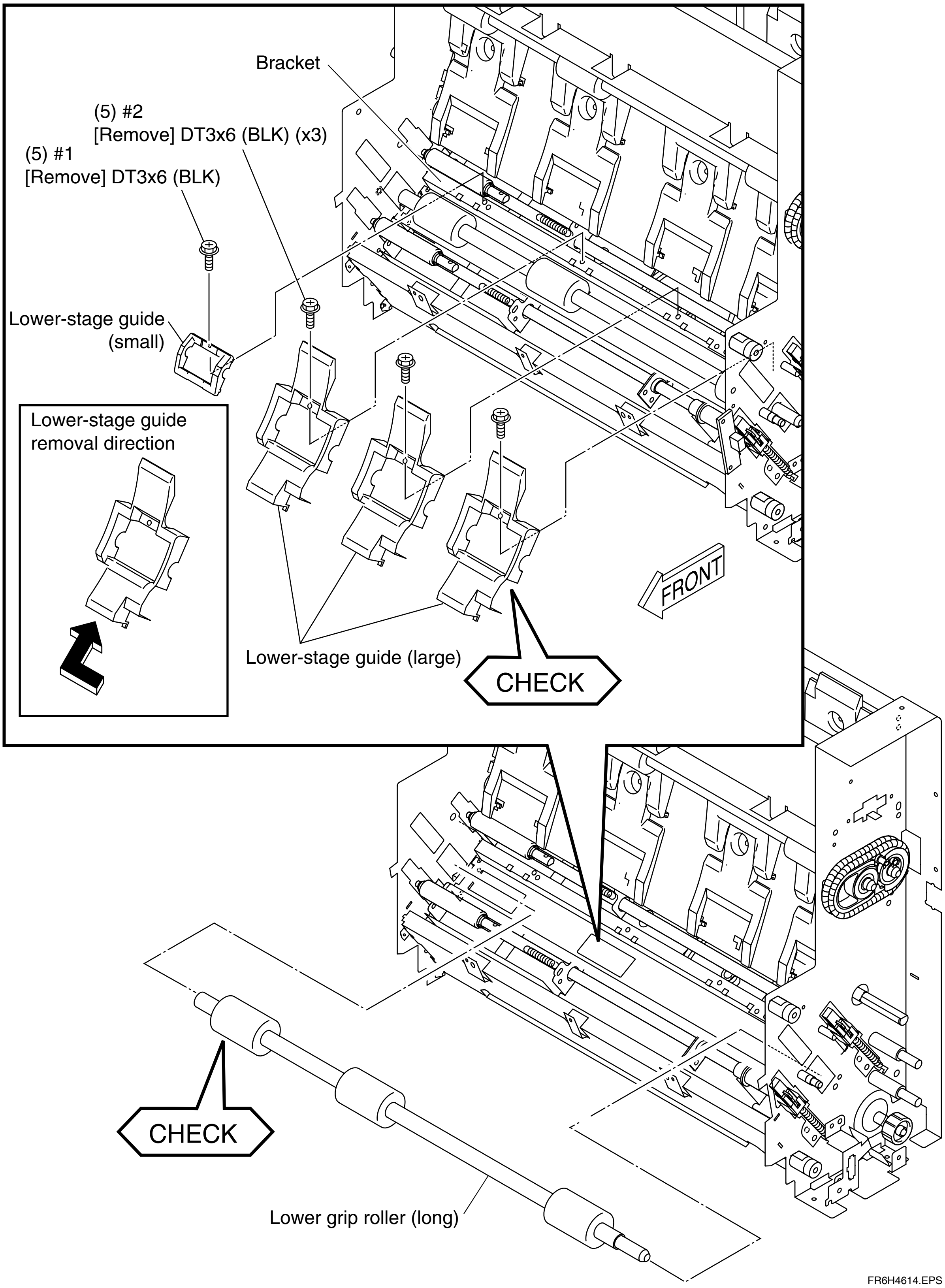

DETAIL A
#1
[Remove] Extension coil spring (L = 116 mm)
#1
[Remove] Extension coil spring (L = 160 mm)
Timing belt pulley
Spacer
#2
[Remove] E4 (x2)
Housing
Ball bearing (mid)
Ball bearing (small)
Spacer
Ball bearing (large)
Ball bearing (small)
A
Ball bearing (mid)
Housing
Ball bearing (large)
Ball bearing (small)
Lower grip roller (short)
CHECK
FRONT
Ball bearing (small)
Spacer
#1
[Remove] Extension coil spring (x2)
(L = 160 mm)
#2
[Remove] E4 (x2)
FR6H4613.EPS

**◆ *NOTE* ◆**

*The lower-stage guides should be removed in accordance with their removal direction.*

(5) Remove the lower-stage guides (large) and (small).

(6) Remove the lower grip roller (long).


Bracket
(5) #2
[Remove] DT3x6 (BLK) (x3)
(5) #1
[Remove] DT3x6 (BLK)
Lower-stage guide (small)
Lower-stage guide removal direction
FRONT
Lower-stage guide (large)
CHECK
CHECK
Lower grip roller (long)

FR6H4614.EPS

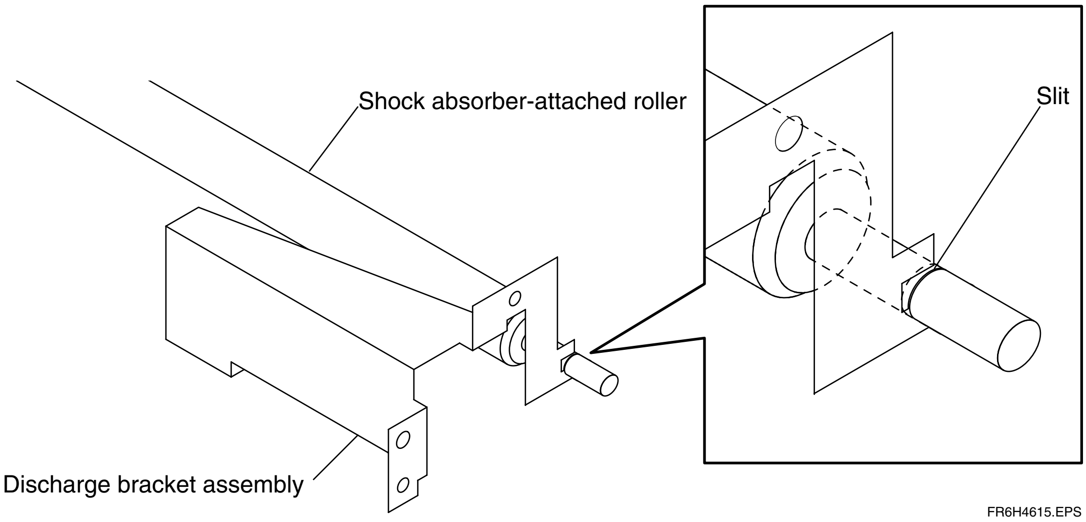
## ■ Reinstallation Procedures

***◆ INSTRUCTION ◆***

*The extension coil springs and lower grip rollers differ in length depending on where they are attached. When attaching the extension coil springs and lower grip rollers, use care not to confuse their locations.*

***◆ NOTE ◆***

*When attaching the shock absorber-attached roller, ensure that the notch of the discharge bracket assembly is fitted into the slit.*

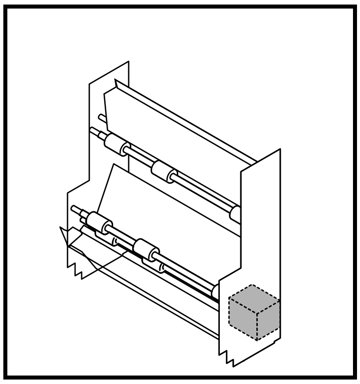

Shock absorber-attached roller
Slit
Discharge bracket assembly
FR6H4615.EPS

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Check the attachment locations of the lower grip rollers.
- Make sure that the latch of the lower-stage guide is locked to the bracket.

## 7.7 Motor (MC2)



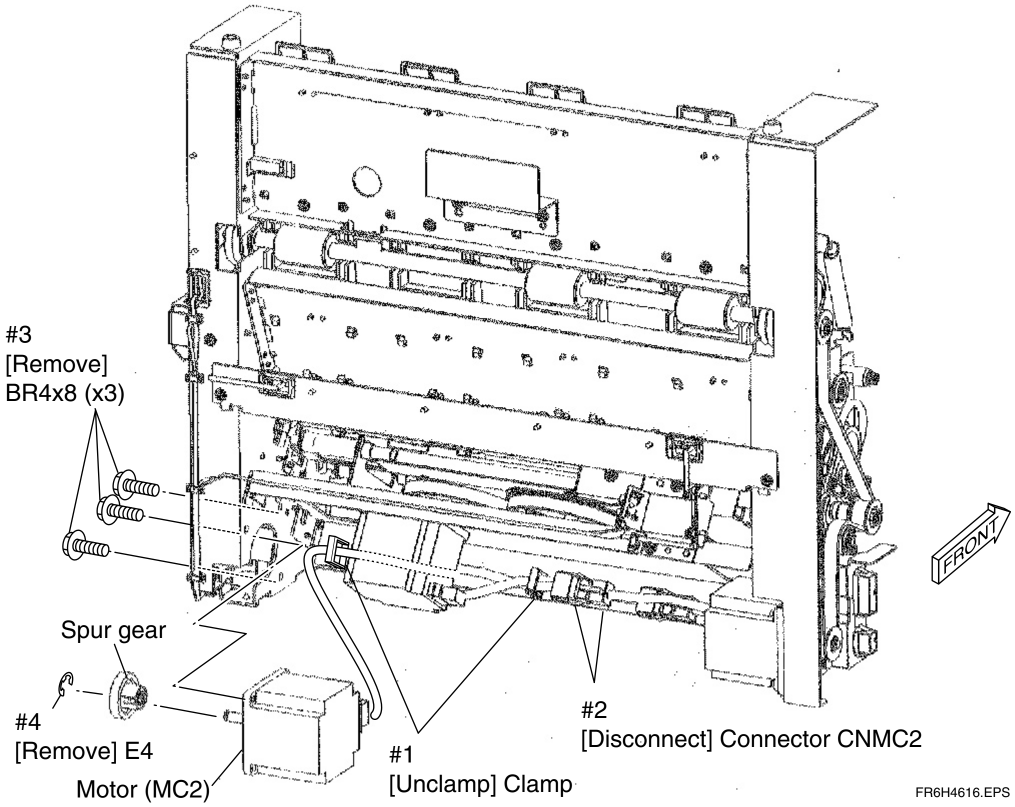
FR6H4657.EPS

### ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ "7.1 Side-Positioning Conveyor"

(2) Remove the motor (MC2).

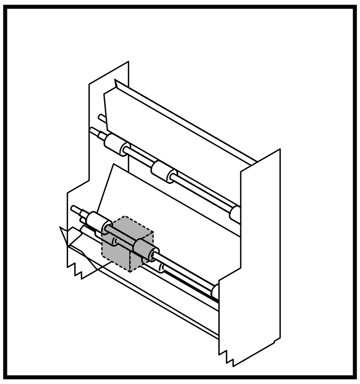

#3
[Remove]
BR4x8 (x3)
Spur gear
#4
[Remove] E4
Motor (MC2)
#1
[Unclamp] Clamp
#2
[Disconnect] Connector CNMC2
FRONT

FR6H4616.EPS

### ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 7.8 Motor (MC3)



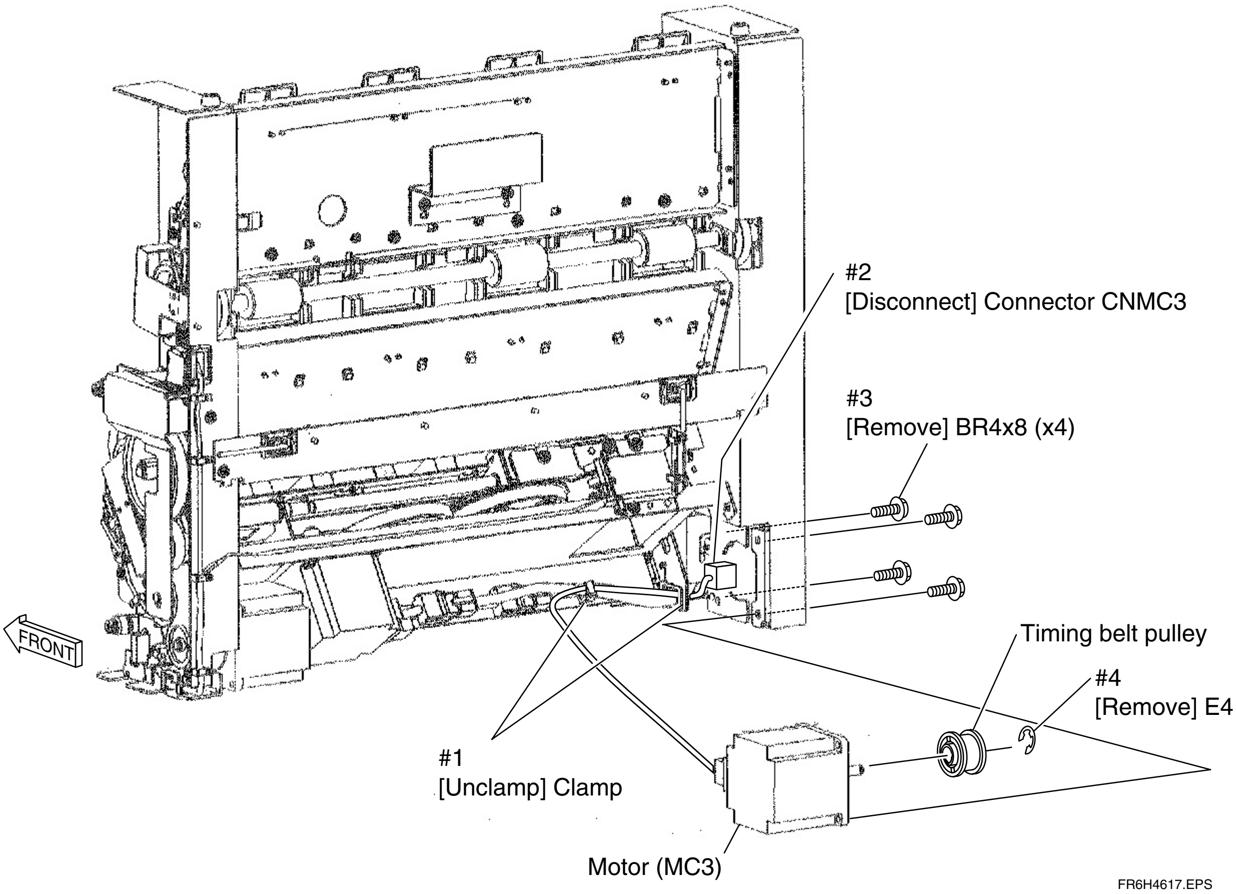
FR6H4658.EPS

### ■ Removal Procedures

(1) Remove the timing belt.

☞ “7.2 Timing Belt”

(2) Remove the motor (MC3).

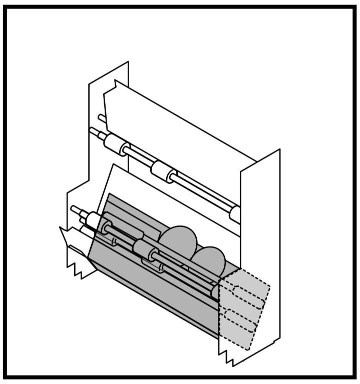

#2
[Disconnect] Connector CNMC3
#3
[Remove] BR4x8 (x4)
Timing belt pulley
#4
[Remove] E4
#1
[Unclamp] Clamp
Motor (MC3)
FRONT

FR6H4617.EPS

### ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 7.9 Latch Driver



FR6H4659.EPS

## ■ Removal Procedures

(1) Remove the motor (MC2).

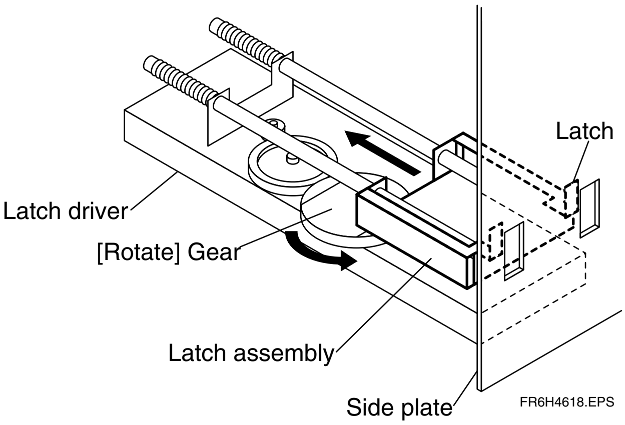
☞ "7.7 Motor (MC2)"

(2) Remove the motor (MC3).

☞ "7.8 Motor (MC3)"

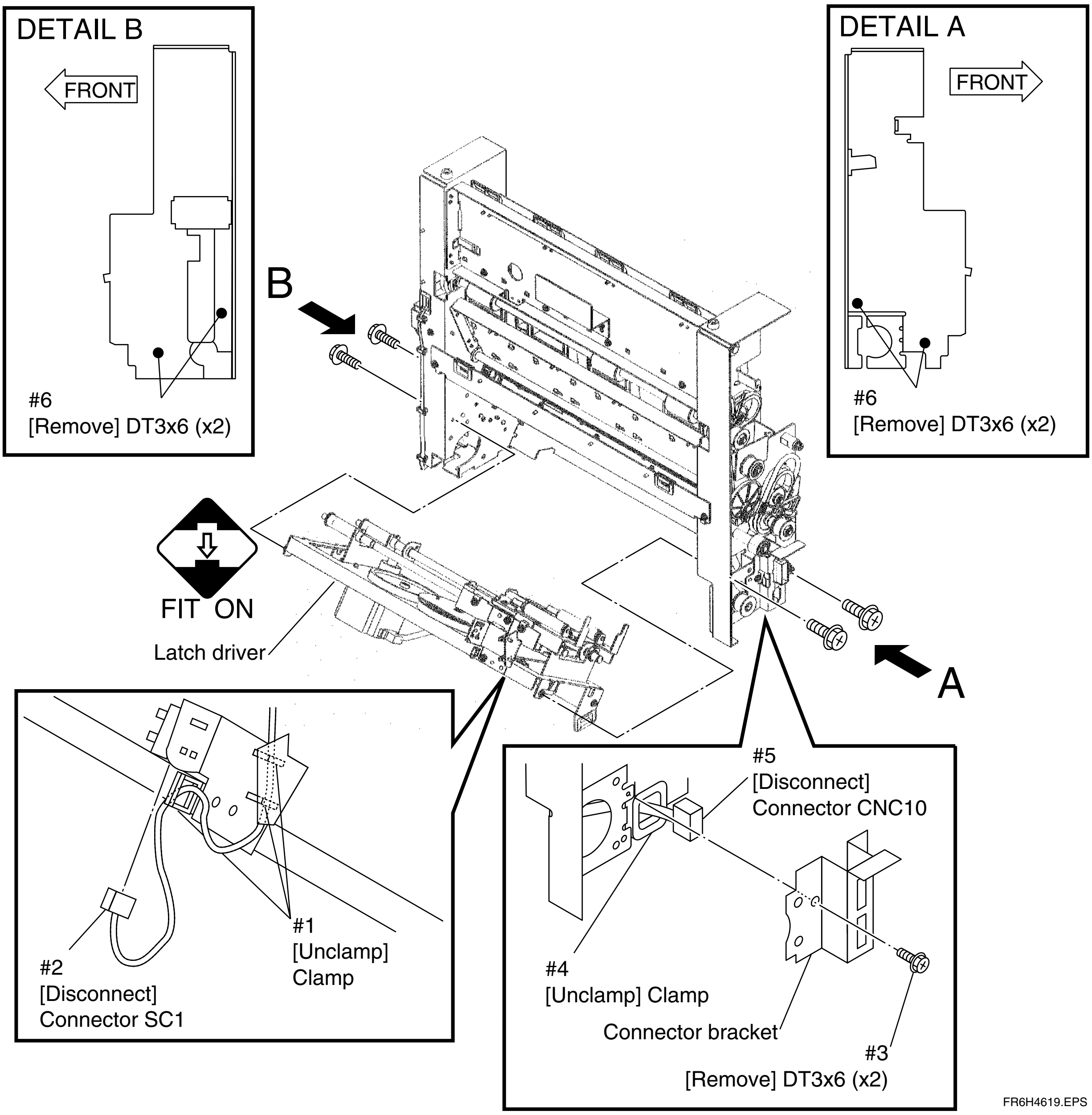
**◆ *NOTE* ◆**

*To remove the latch driver, manually rotate the gear until the latches of the latch assembly are positioned inside the side plate of the machine.*


Latch
Latch driver
[Rotate] Gear
Latch assembly
Side plate

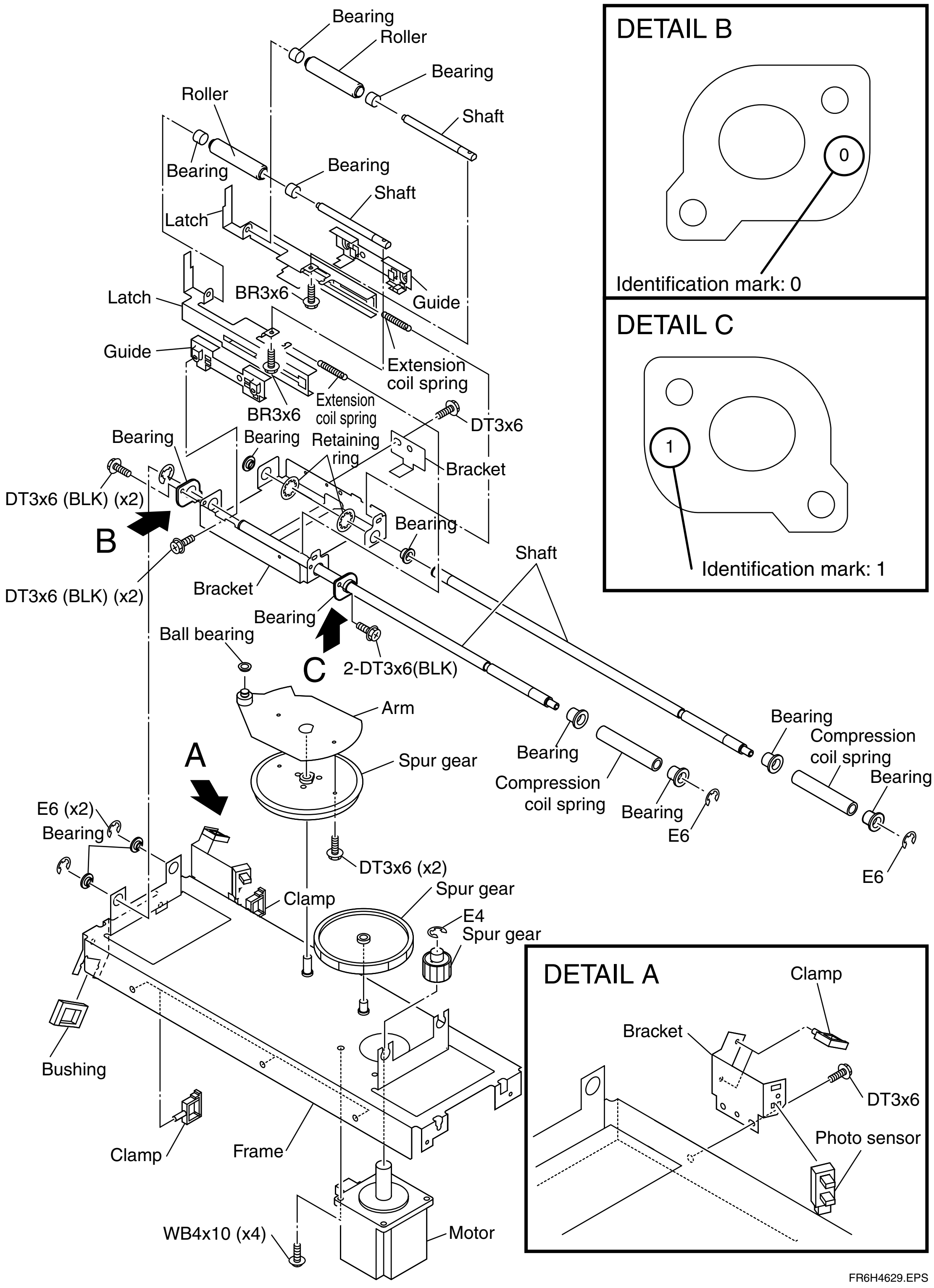
FR6H4618.EPS

(3) Remove the latch driver.


DETAIL B
FRONT
#6
[Remove] DT3x6 (x2)
DETAIL A
FRONT
#6
[Remove] DT3x6 (x2)
B
A
FIT ON
Latch driver
#1
[Unclamp]
Clamp
#2
[Disconnect]
Connector SC1
#5
[Disconnect]
Connector CNC10
#4
[Unclamp] Clamp
Connector bracket
#3
[Remove] DT3x6 (x2)

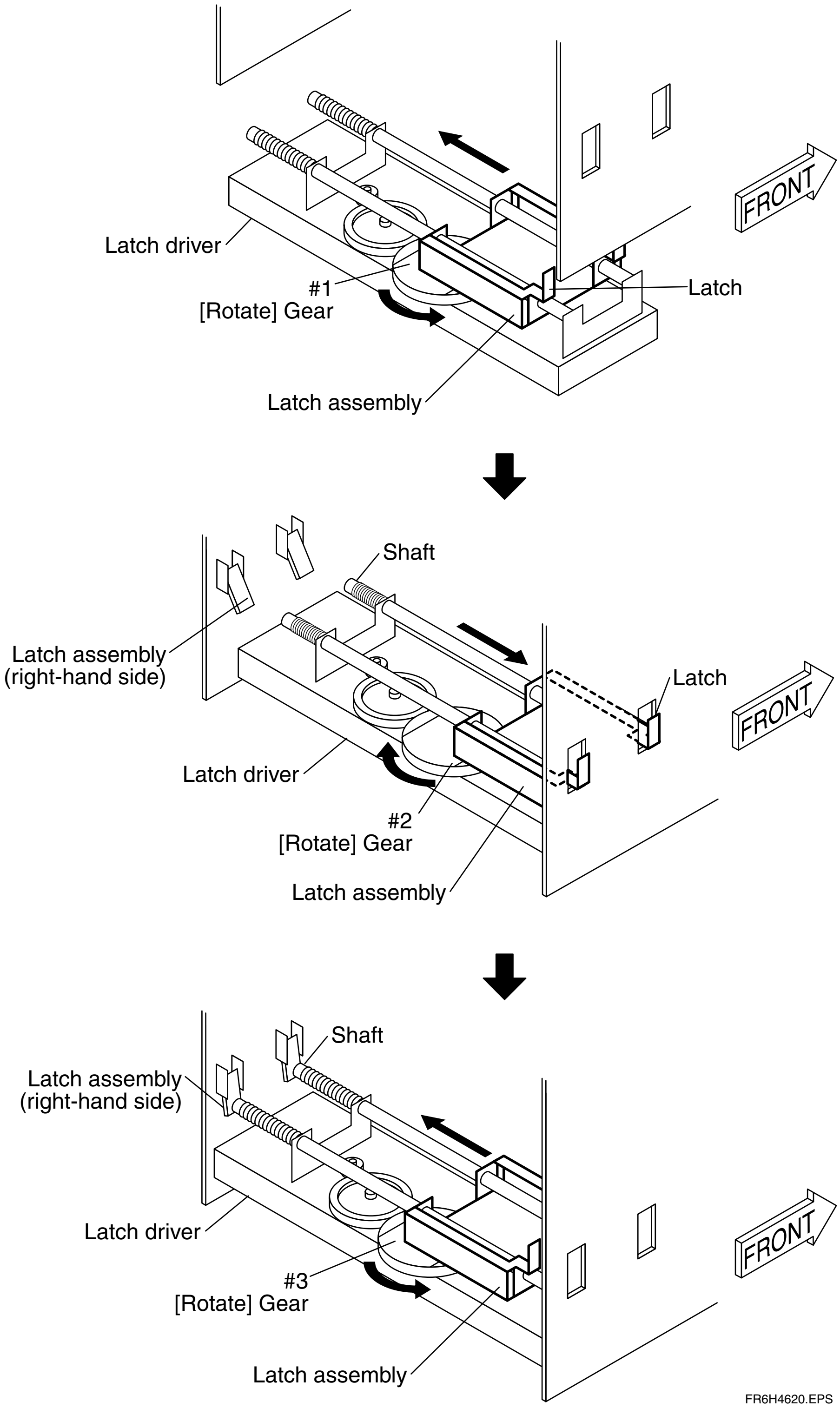
FR6H4619.EPS

## ■ Exploded View


Bearing
Roller
Bearing
Shaft
Roller
Bearing
Bearing
Shaft
Latch
Latch
BR3x6
Guide
Guide
Extension coil spring
BR3x6
Extension coil spring
DT3x6
Bearing
Bearing
Retaining ring
Bracket
DT3x6 (BLK) (x2)
B
Bearing
Shaft
DT3x6 (BLK) (x2)
Bracket
Bearing
Ball bearing
C
2-DT3x6(BLK)
Arm
A
Spur gear
Bearing
Compression coil spring
Bearing
E6
Bearing
Compression coil spring
Bearing
E6
E6 (x2)
Bearing
DT3x6 (x2)
Clamp
Spur gear
E4
Spur gear
Bushing
Clamp
Frame
WB4x10 (x4)
Motor
DETAIL B
0
Identification mark: 0
DETAIL C
1
Identification mark: 1
DETAIL A
Clamp
Bracket
DT3x6
Photo sensor
FR6H4629.EPS

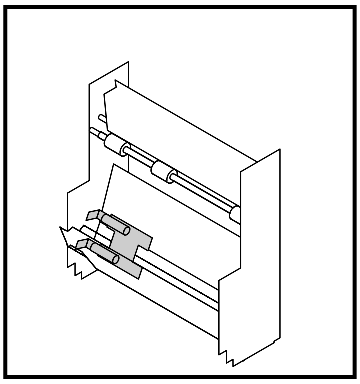
## ■ Reinstallation Procedures

(1) While manually rotating the gear in the direction of the arrow, attach the latch assembly.


Latch driver
#1
[Rotate] Gear
Latch
FRONT
Latch assembly
Shaft
Latch assembly
(right-hand side)
Latch
FRONT
Latch driver
#2
[Rotate] Gear
Latch assembly
Shaft
Latch assembly
(right-hand side)
Latch driver
#3
[Rotate] Gear
FRONT
Latch assembly
FR6H4620.EPS

(2) Press the latch driver to the half punch and snap it into place.

# 7.10 Latch Assembly (Latch Driver)



FR6H4660.EPS

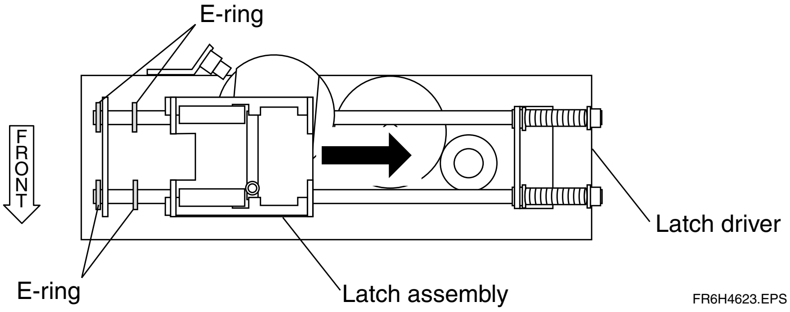
## ■ Removal Procedures

(1) Remove the latch driver.

☞ “7.9 Latch Driver

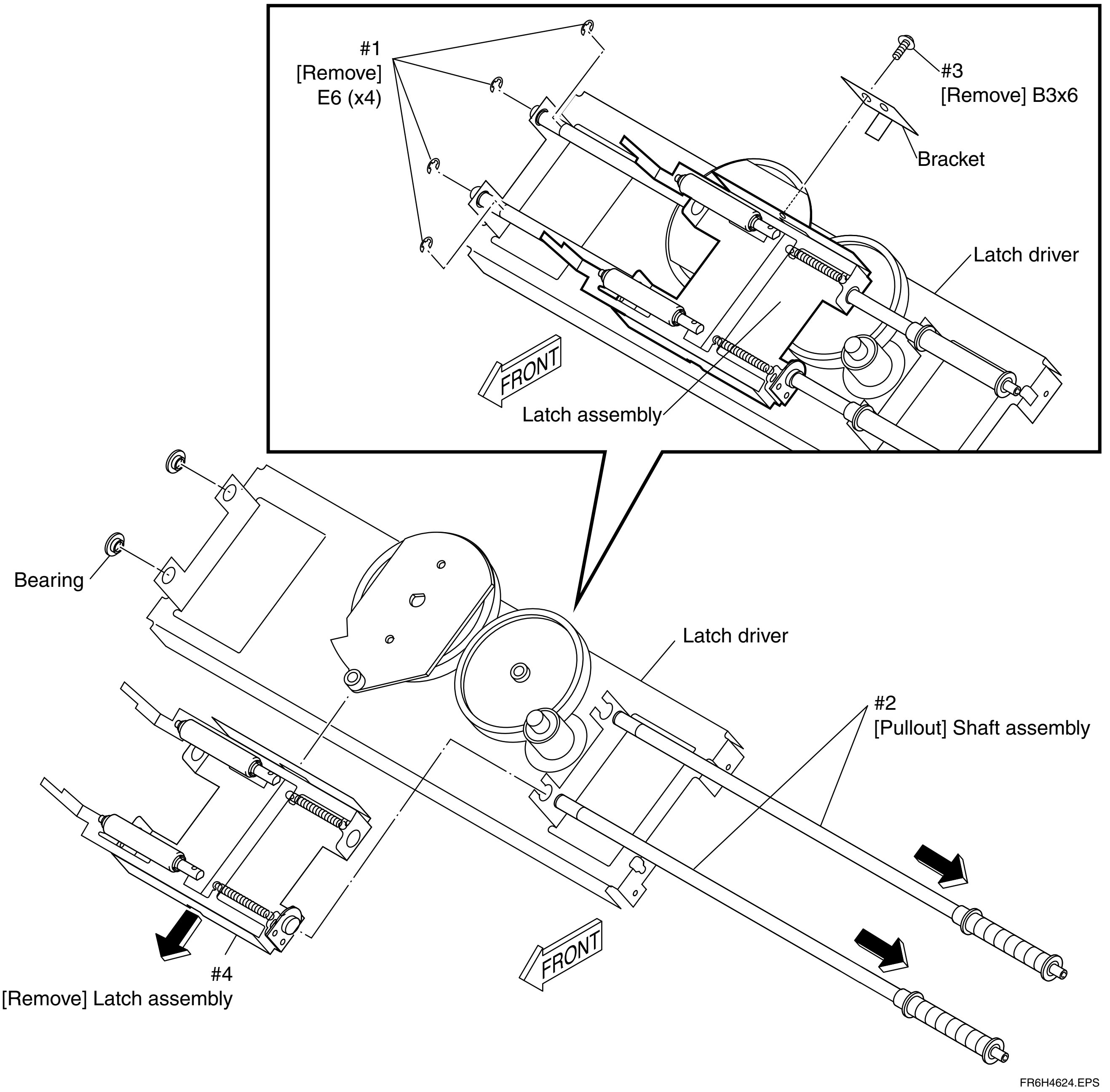
**◇ *REFERENCE* ◇**

*To remove the latch assembly, slide the latch assembly in the direction of the arrow as illustrated below to facilitate access to the E-rings that retain the shaft.*


E-ring
FRONT
Latch driver
E-ring
Latch assembly

FR6H4623.EPS

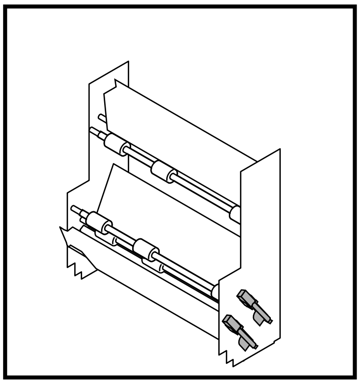
(2) Remove the latch assembly.


#1
[Remove]
E6 (x4)
#3
[Remove] B3x6
Bracket
Latch driver
FRONT
Latch assembly
Bearing
Latch driver
#2
[Pullout] Shaft assembly
#4
[Remove] Latch assembly
FRONT
FR6H4624.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 7.11 Latch Assembly (Right-Hand Side)



FR6H4661EPS

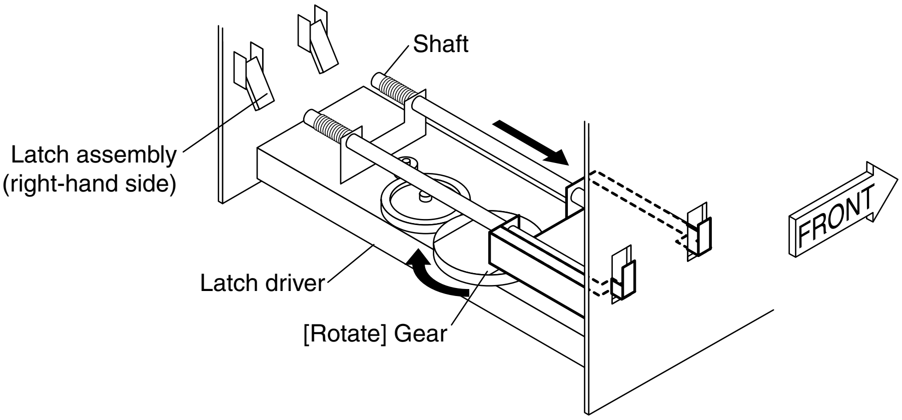
## ■ Removal Procedures

(1) Remove the grip mechanism (right-hand side).

☞ “7.4 Grip Mechanism (Right-Hand Side)”

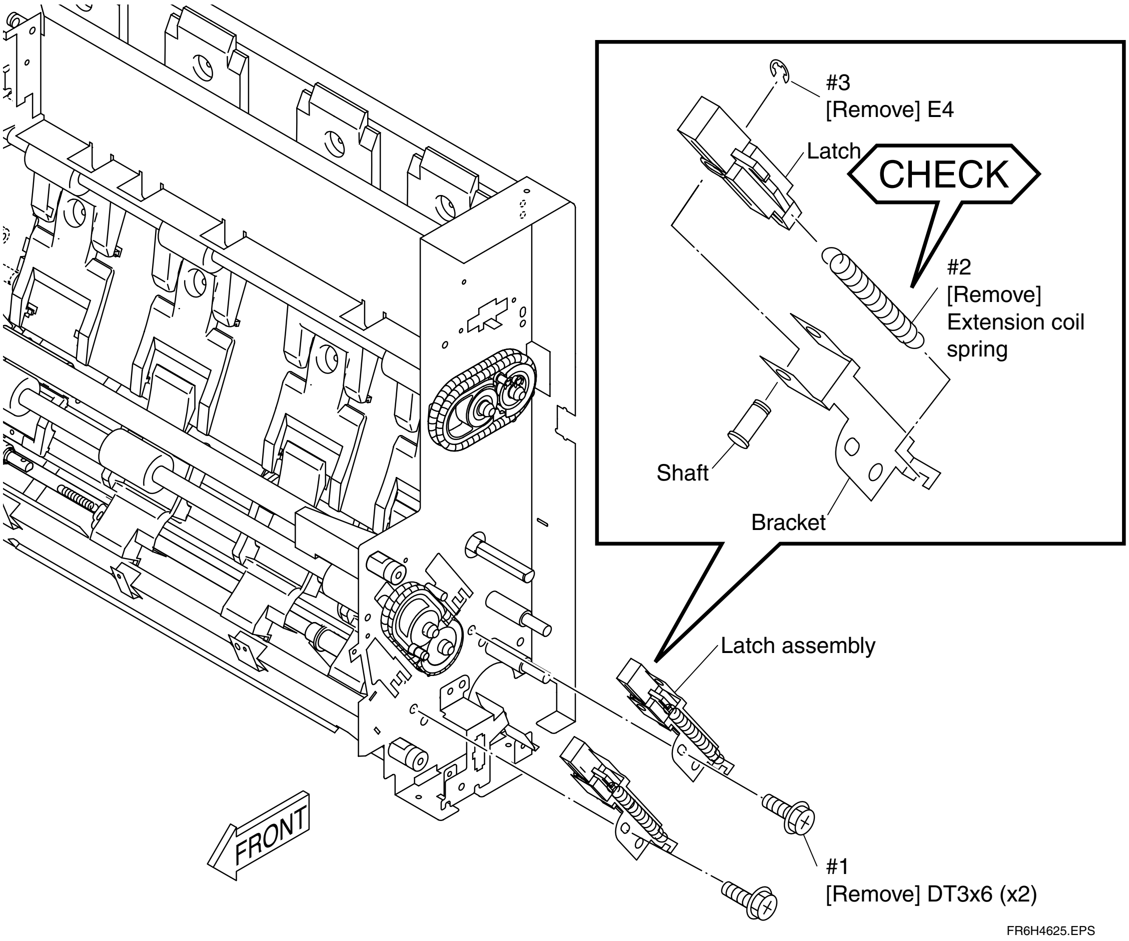
◆ ***NOTE*** ◆

*To remove the latch assembly (right-hand side), manually rotate the gear in the direction of the arrow to shift the shafts of the latch driver away from the latch assembly (right-hand side).*


Shaft
Latch assembly (right-hand side)
FRONT
Latch driver
[Rotate] Gear

FR6H4630.EPS

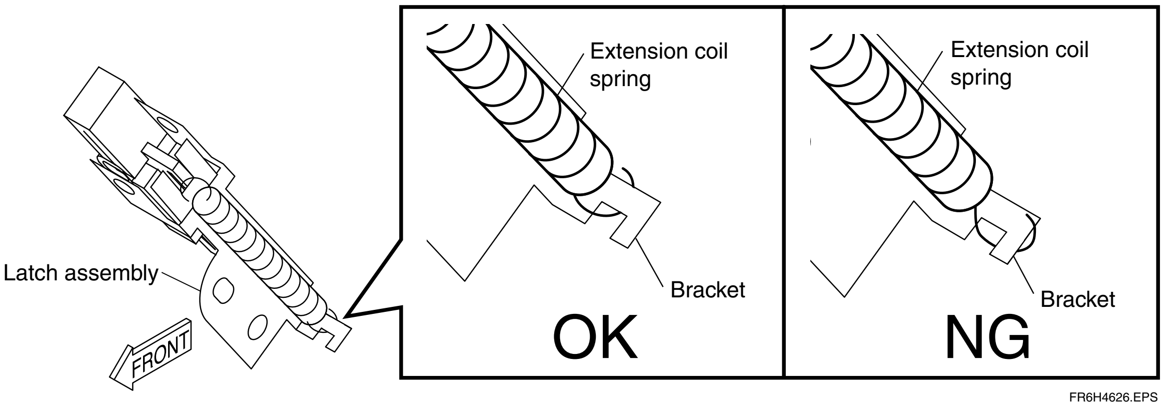
(2) Remove the latch assembly.


#3
[Remove] E4
Latch
CHECK
#2
[Remove]
Extension coil
spring
Shaft
Bracket
Latch assembly
FRONT
#1
[Remove] DT3x6 (x2)
FR6H4625.EPS

## ■ Reinstallation Procedures

◆ ***INSTRUCTION*** ◆

*The extension coil spring should be attached properly.*

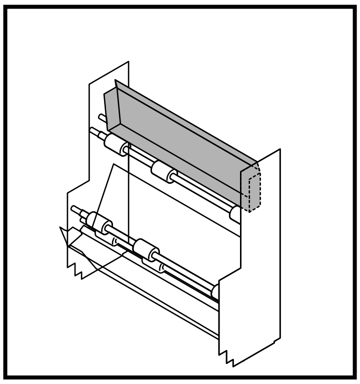

Latch assembly
FRONT
Extension coil
spring
Bracket
OK
Extension coil
spring
Bracket
NG
FR6H4626.EPS

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the extension coil spring is attached correctly.

## 7.12 Movable Guide

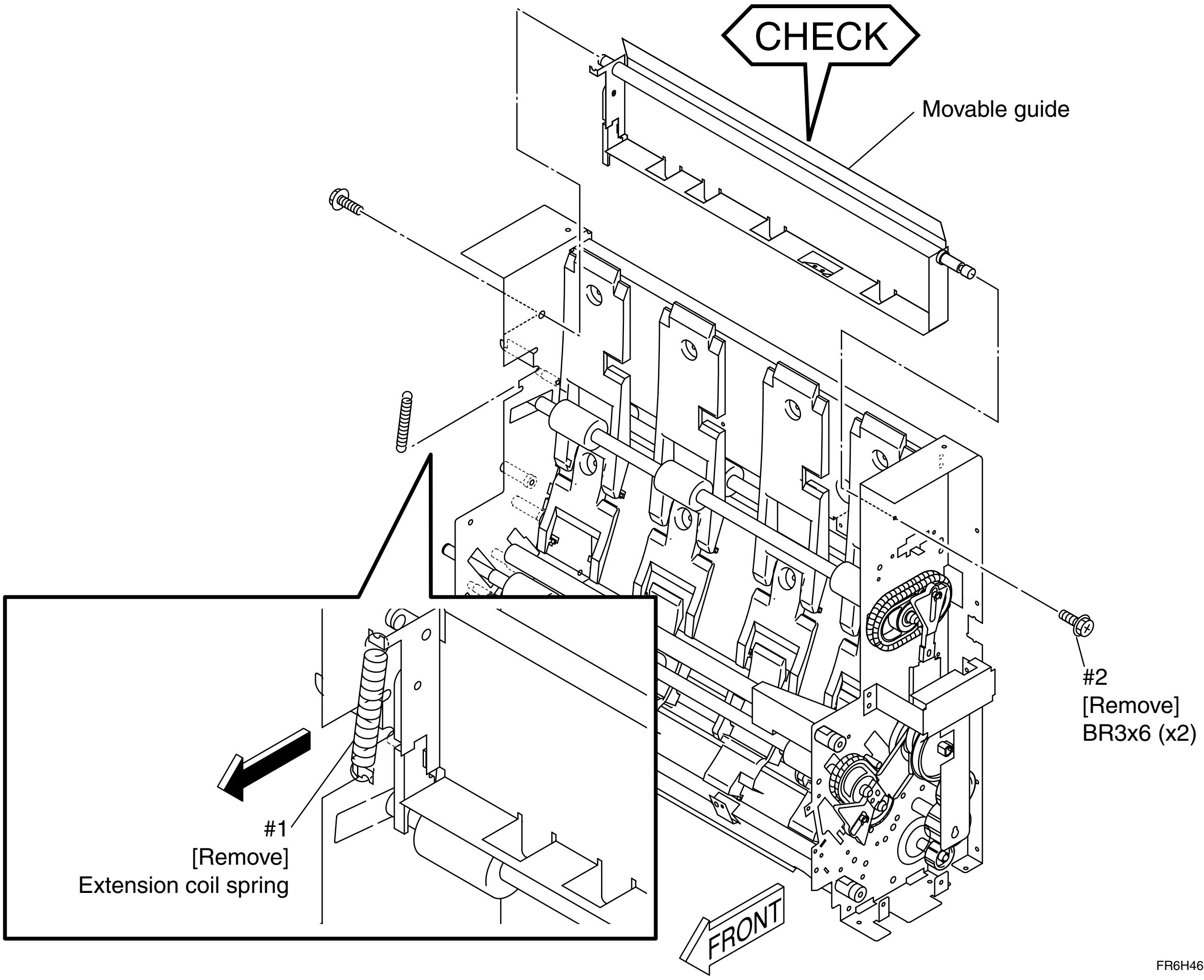

FR6H4662.EPS

## ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ “7.1 Side-Positioning Conveyor

(2) Remove the movable guide.

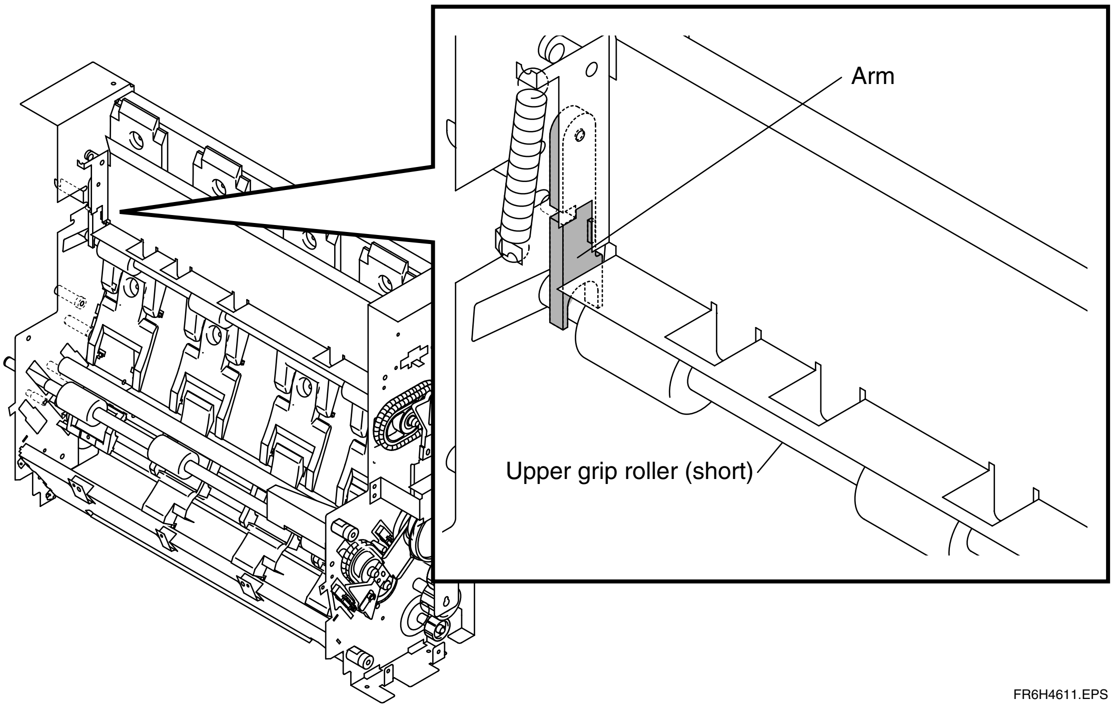

CHECK
Movable guide
#2
[Remove]
BR3x6 (x2)
#1
[Remove]
Extension coil spring
FRONT
FR6H4627.EPS

## ■ Reinstallation Procedures

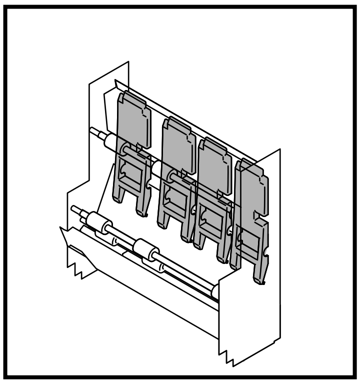
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the lower grip roller is fitted into the notch of the arm.


Arm
Upper grip roller (short)
FR6H4611.EPS

# 7.13 Upper-Stage Guide



FR6H4663.EPS

## ■ Removal Procedures

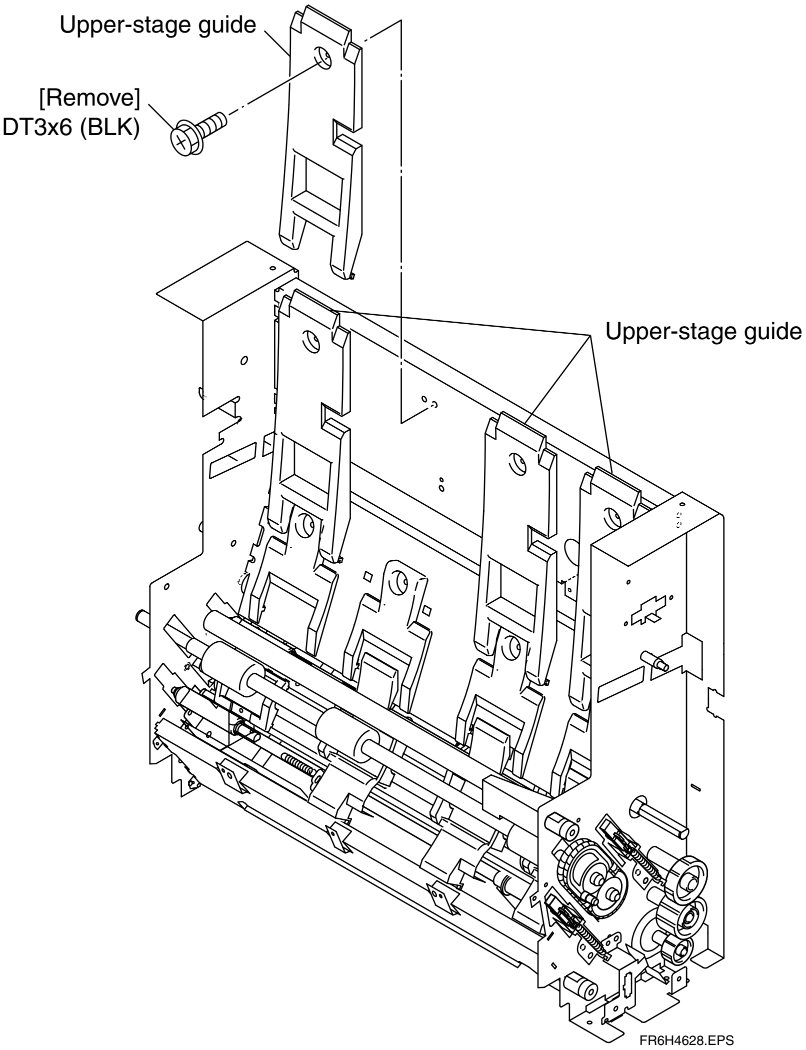
(1) Remove the upper grip roller.

☞ “7.5 Upper Grip Roller”

(2) Remove the movable guide.

☞ “7.12 Movable Guide”

(3) Remove the upper-stage guide.


Upper-stage guide
[Remove]
DT3x6 (BLK)
Upper-stage guide

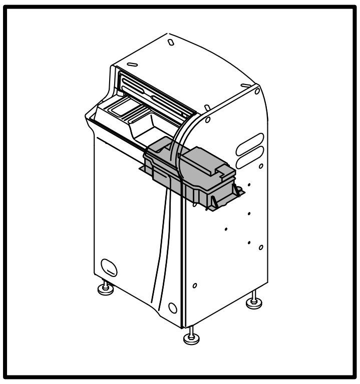
FR6H4628.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 8. Removing and Reinstalling the Scanning Optics Unit

## 8.1 Scanning Optics Unit



FR6H4751.EPS

**WARNING**

*The scanning optics unit should not be removed or installed by other than a service engineer who has been trained to do so.*

**CAUTIONS**

- *When servicing the scanning optics unit, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*
- *The procedures for removing and reinstalling the scanning optics unit differ depending on the version (VER:) of that unit. Before performing the procedures, check the revision of the scanning optics unit.*

**◆ INSTRUCTION ◆**

*Do not remove the top cover of the scanning optics unit.*

### ■ Removal Procedures

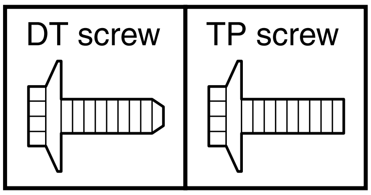
(1) Remove the covers.

- Front cover
- Left-hand side cover
- Right-hand side cover

☞ “3.1 Removing and Reinstalling the Covers”

◆ **NOTES** ◆

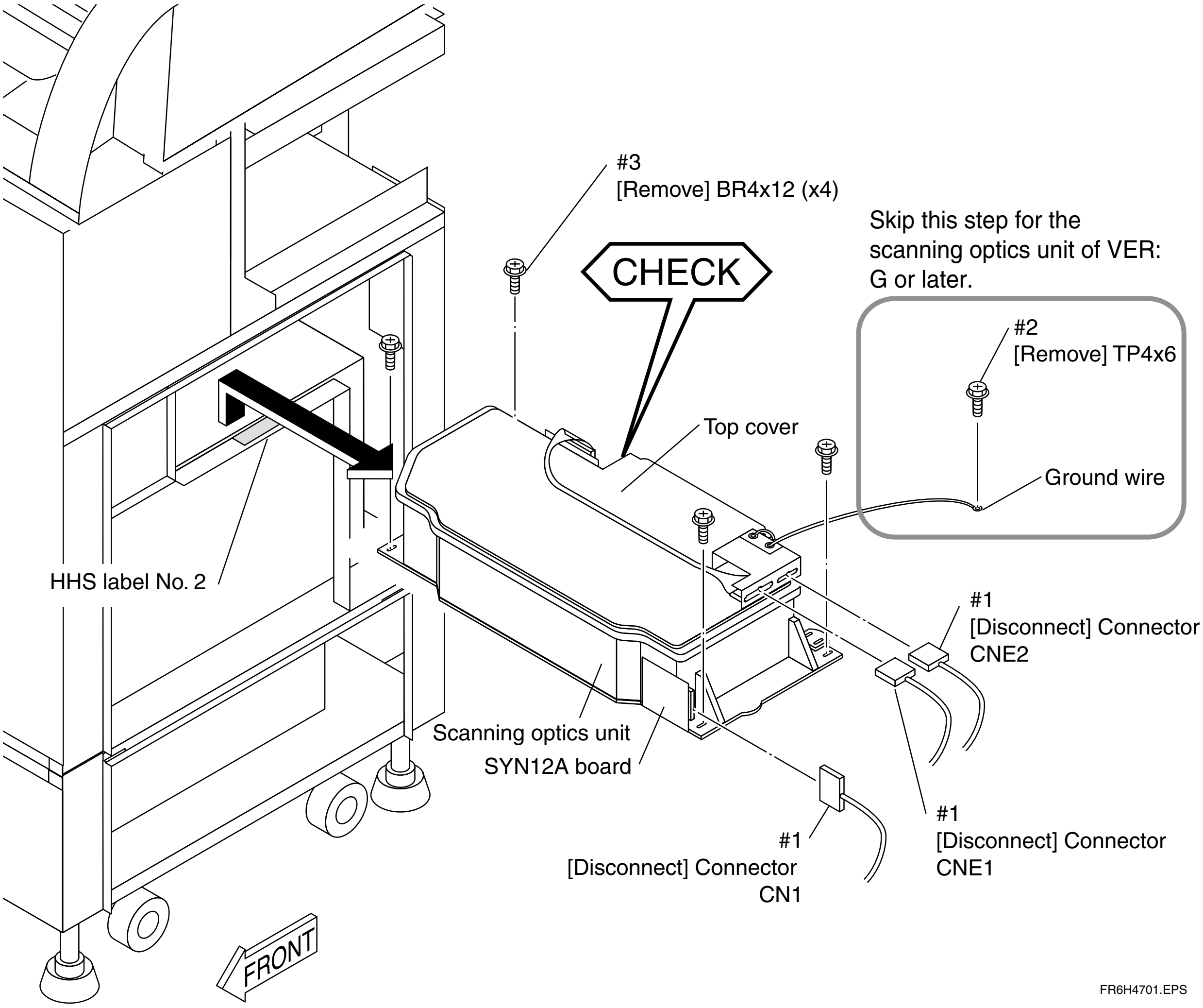
- *The TP screw used to secure the ground wire for mounting the scanning optics unit of VER: F or earlier is similar in shape to a DT screw.*
  *When attaching the screw, check its shape to avoid confusing it with a wrong one.*


DT screw
TP screw

FR6H4105.EPS

- *No ground wire is provided for scanning optics units of VER: G or later.*

(2) Remove the scanning optics unit.


#3
[Remove] BR4x12 (x4)
CHECK
Skip this step for the scanning optics unit of VER: G or later.
#2
[Remove] TP4x6
Top cover
Ground wire
HHS label No. 2
#1
[Disconnect] Connector CNE2
Scanning optics unit
SYN12A board
#1
[Disconnect] Connector CN1
#1
[Disconnect] Connector CNE1
FRONT

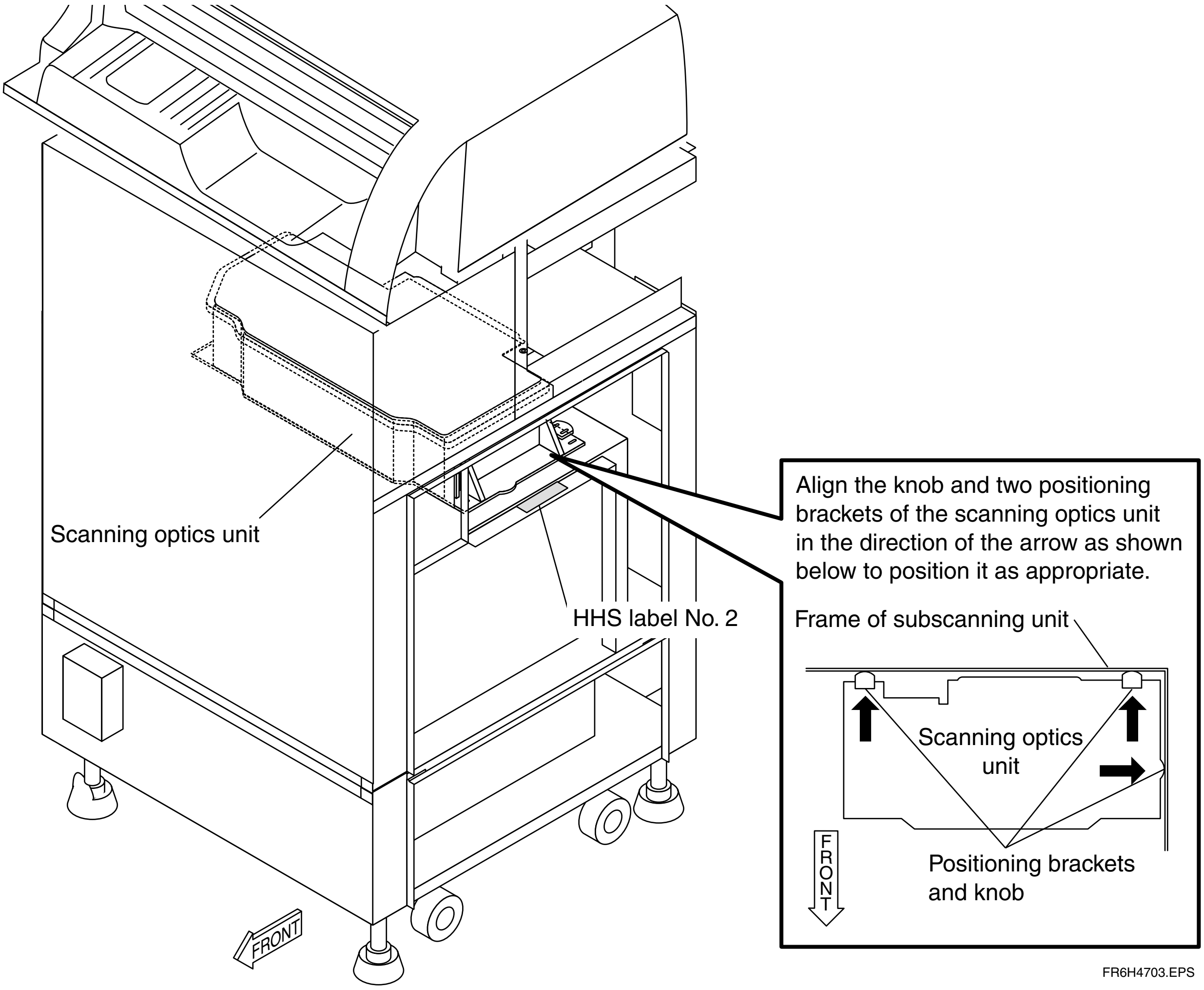
FR6H4701.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*When installing the scanning optics unit, press the positioning brackets of the scanning optics unit against the frame of the subscanning unit to secure it in place.*

For reinstallation, reverse the removal steps.


Scanning optics unit
HHS label No. 2
FRONT
Frame of subscanning unit
Scanning optics unit
Positioning brackets and knob
FRONT

Align the knob and two positioning brackets of the scanning optics unit in the direction of the arrow as shown below to position it as appropriate.

FR6H4703.EPS

## ■ Combination of Scanning Optics Unit Version and CR-IR346RU Software Version

When updating the version of the scanning optics unit, check the version combination table below and update the version of the CR-IR346RU software as well.

| Scanning optics unit version | CR-IR346RU software version |
|---|---|
| – 839Y0035A/B | – A02 |
| 839Y0035C – | A02 – |

TR6H4902.EPS

☞ “13. Version Updating Procedures”

## ■ Check/Adjustment Procedures

### ◆ *INSTRUCTION* ◆

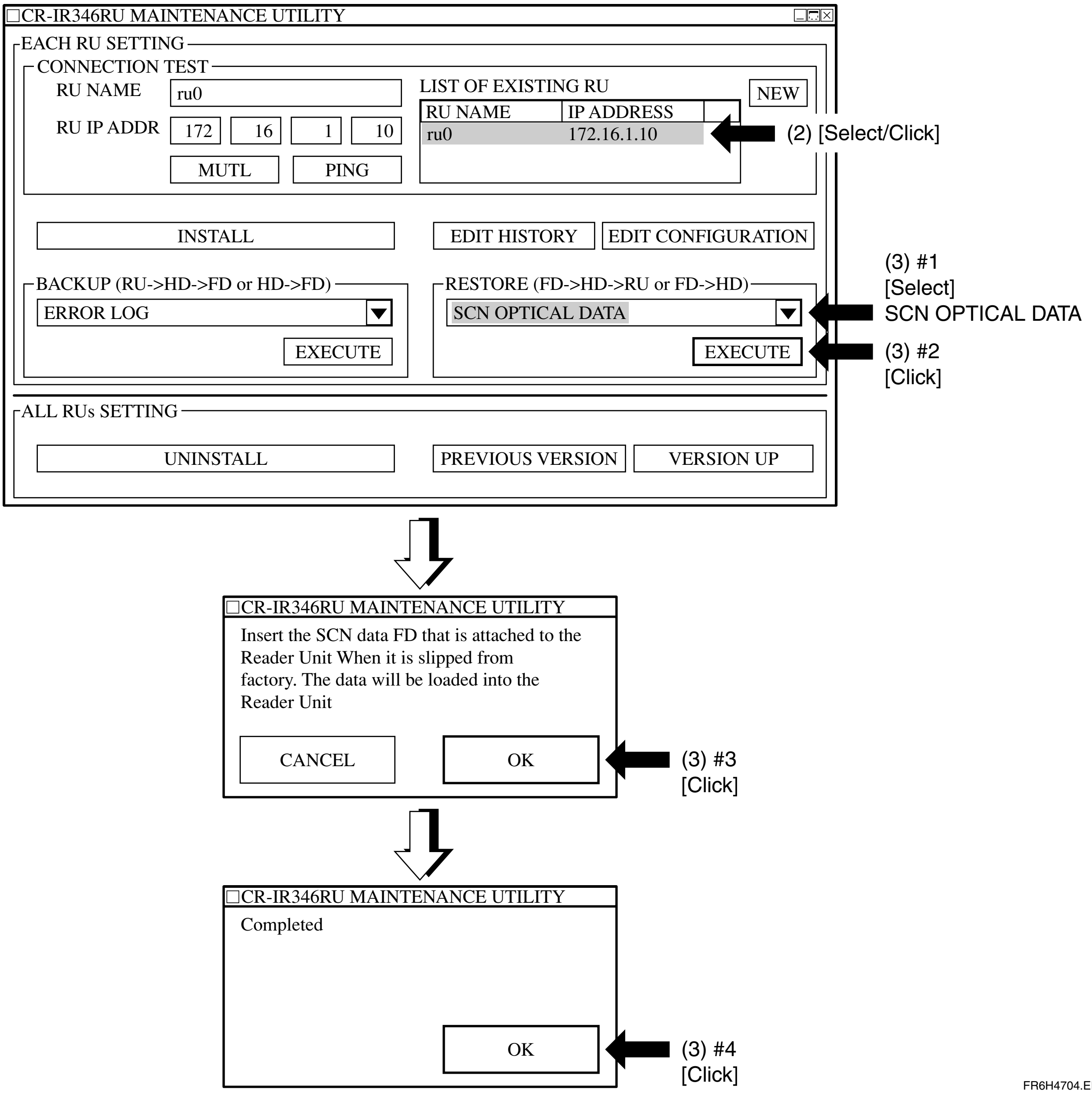
*When the scanning optics unit is replaced with a new one, it is necessary to install the machine-specific data bundled therewith.*
*Take the following steps to install the machine-specific data.*

(1) Set a machine-specific data floppy diskette into the FD drive.

(2) Open the CR-IR346RU MAINTENANCE UTILITY window and select the relevant RU from [LIST OF EXISTING RU].

(3) Install the machine-specific data for the scanning optics unit.

MAINTENANCE UTILITY window



☐CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
CANCEL
OK
OK

RU NAME: ru0

RU IP ADDR: 172 16 1 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

(2) [Select/Click]

BACKUP (RU->HD->FD or HD->FD): ERROR LOG

RESTORE (FD->HD->RU or FD->HD): SCN OPTICAL DATA

(3) #1 [Select] SCN OPTICAL DATA

(3) #2 [Click]

☐CR-IR346RU MAINTENANCE UTILITY

Insert the SCN data FD that is attached to the Reader Unit When it is slipped from factory. The data will be loaded into the Reader Unit

(3) #3 [Click]

☐CR-IR346RU MAINTENANCE UTILITY

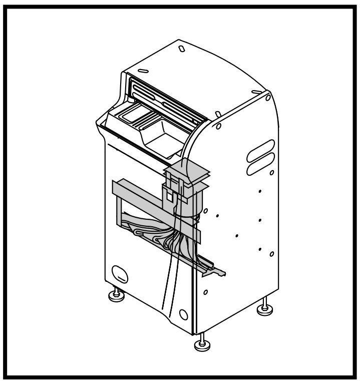
Completed

(3) #4 [Click]

FR6H4704.EPS

# 9. Removing and Reinstalling the Light-Collecting Unit

## 9.1 Light-Collecting Unit



FR6H4850.EPS

⚠ **CAUTION**

*Never touch the light-receiving face of the light-collecting unit even when you are wearing gloves.*

**◆ INSTRUCTION ◆**

*When servicing the light-collecting unit, wear gloves.*

### ■ Removal Procedures

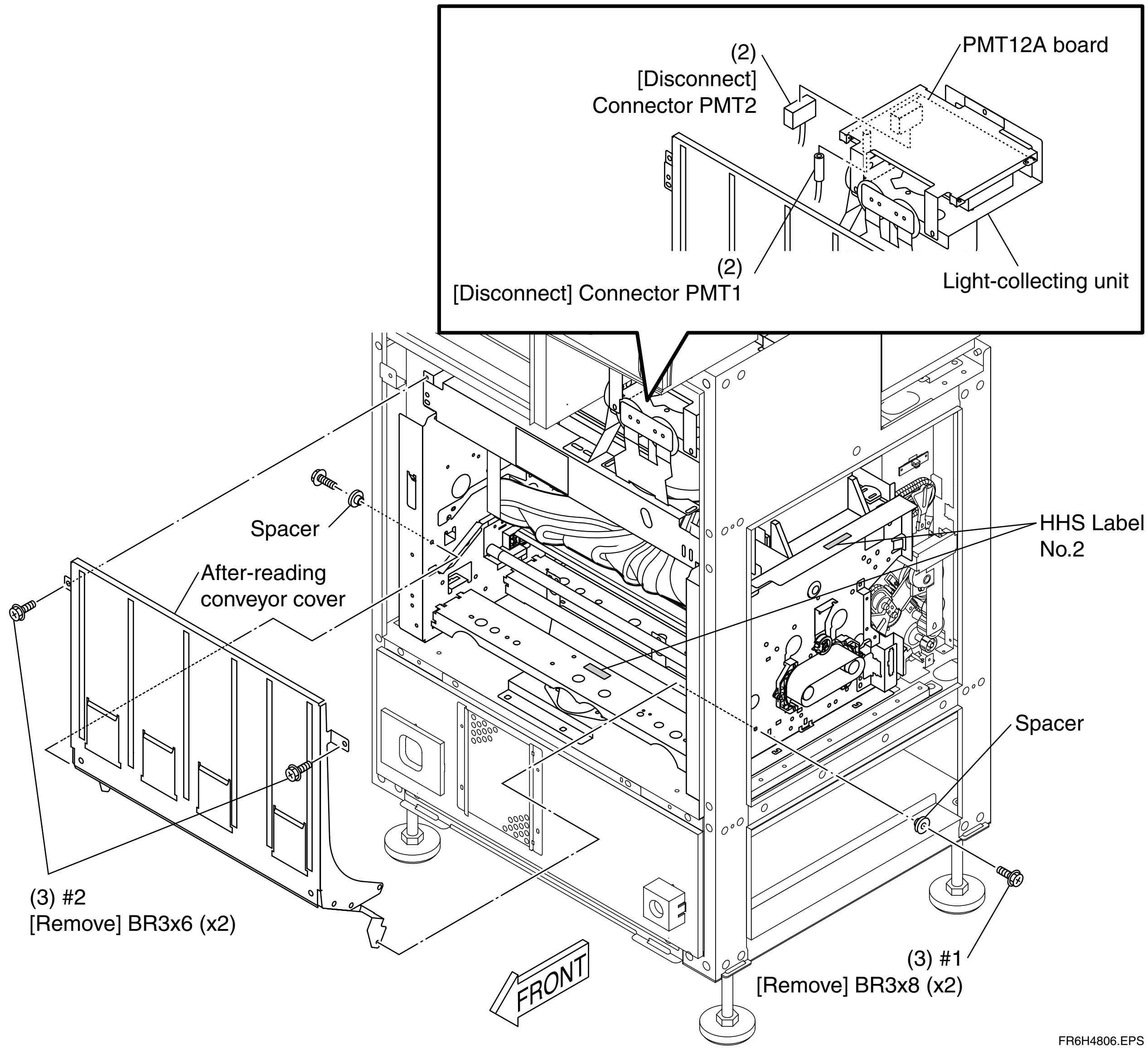
(1) Remove the covers.

- Front cover
- Right-hand side cover
- Left-hand side cover
- Top light protect plate

☞ “3.1 Removing and Reinstalling the Covers”

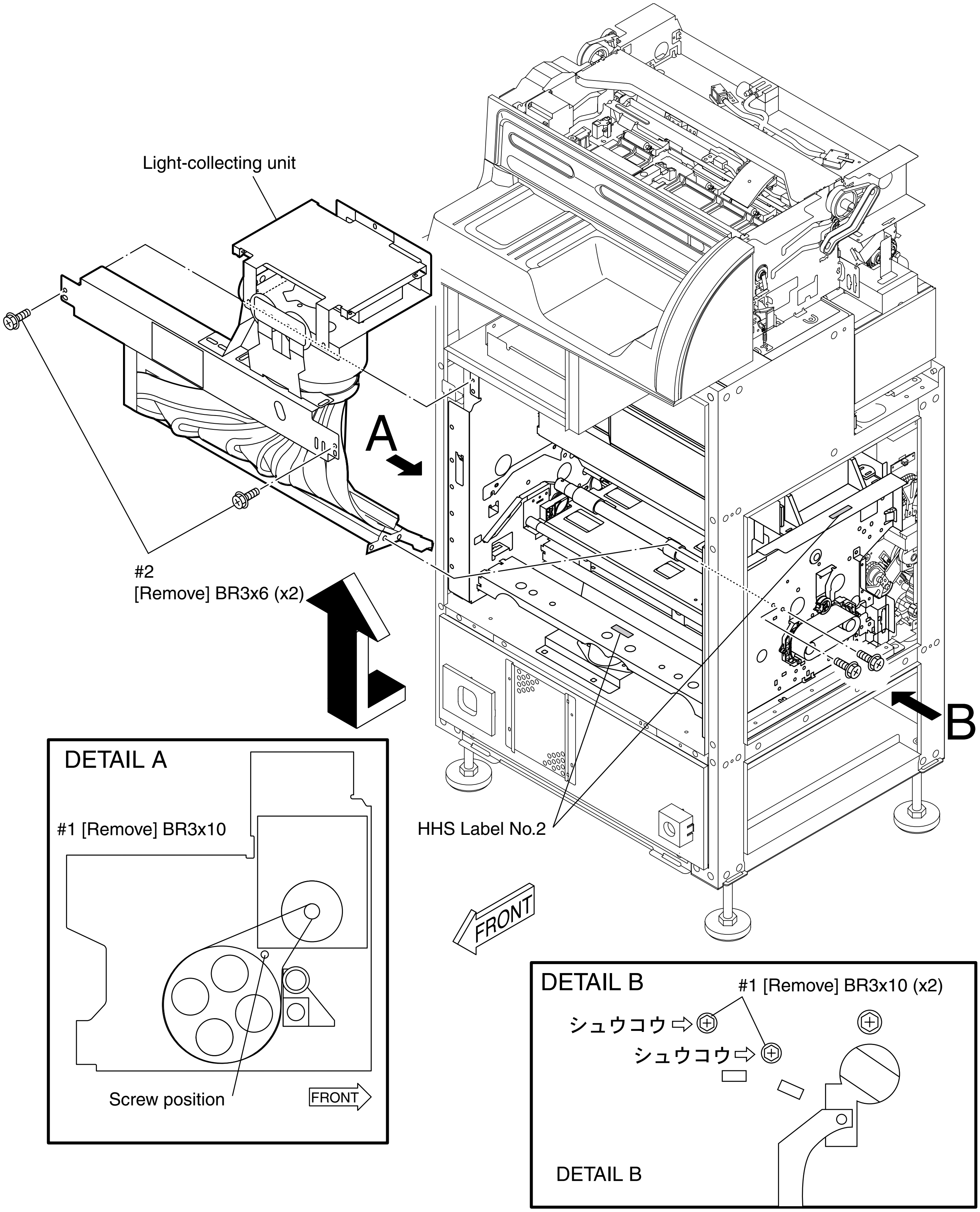
(2) Disconnect the connectors.

(3) Remove the after-reading conveyor cover.


(2)
[Disconnect]
Connector PMT2
PMT12A board
(2)
[Disconnect] Connector PMT1
Light-collecting unit
Spacer
After-reading
conveyor cover
HHS Label
No.2
Spacer
(3) #2
[Remove] BR3x6 (x2)
FRONT
(3) #1
[Remove] BR3x8 (x2)

FR6H4806.EPS

(4) Remove the light-collecting unit.


Light-collecting unit
A
#2
[Remove] BR3x6 (x2)
B
HHS Label No.2
FRONT
DETAIL A
#1 [Remove] BR3x10
Screw position
FRONT
DETAIL B
#1 [Remove] BR3x10 (x2)
シュウコウ⇨
シュウコウ⇨
DETAIL B

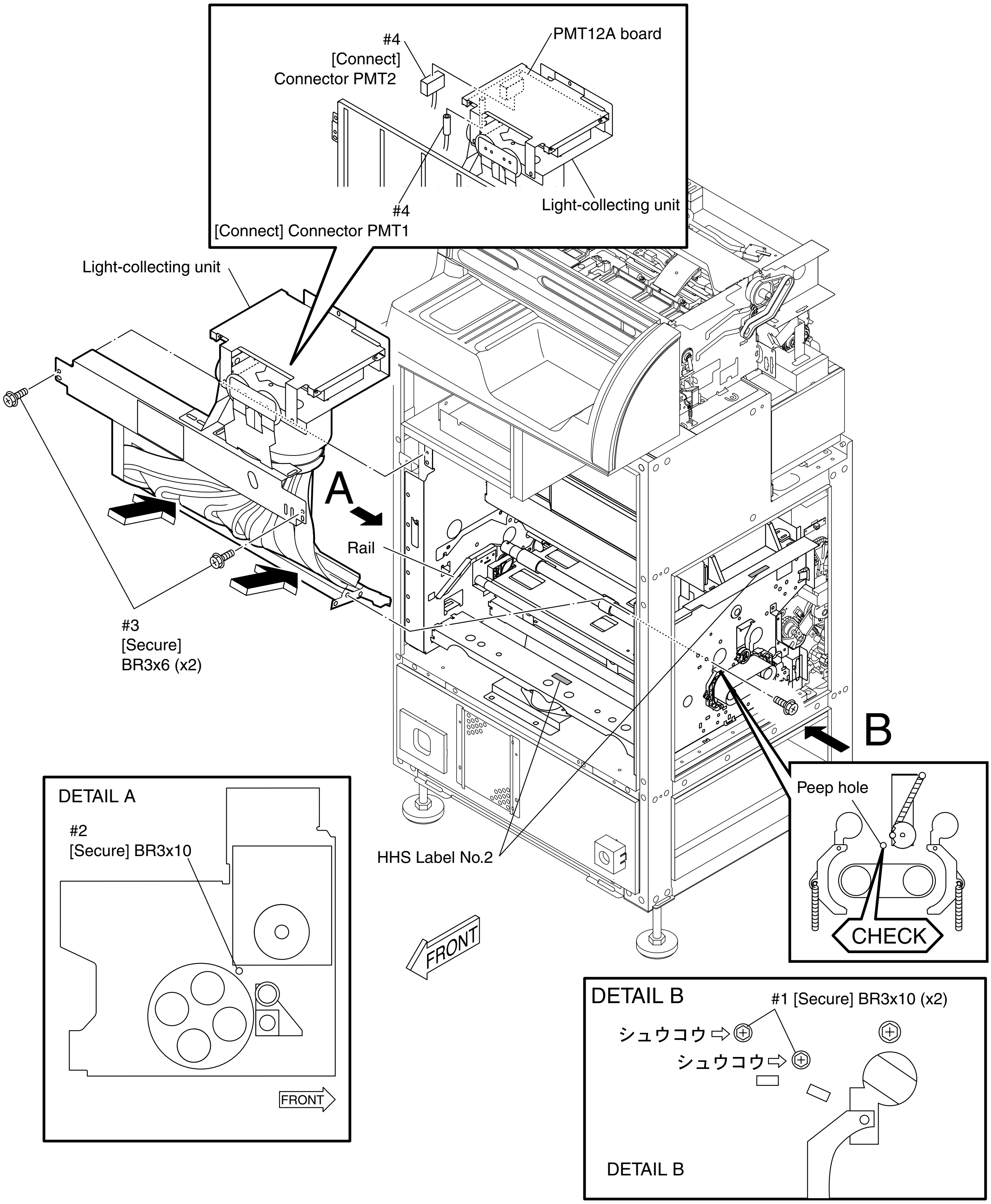
FR6H4801.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

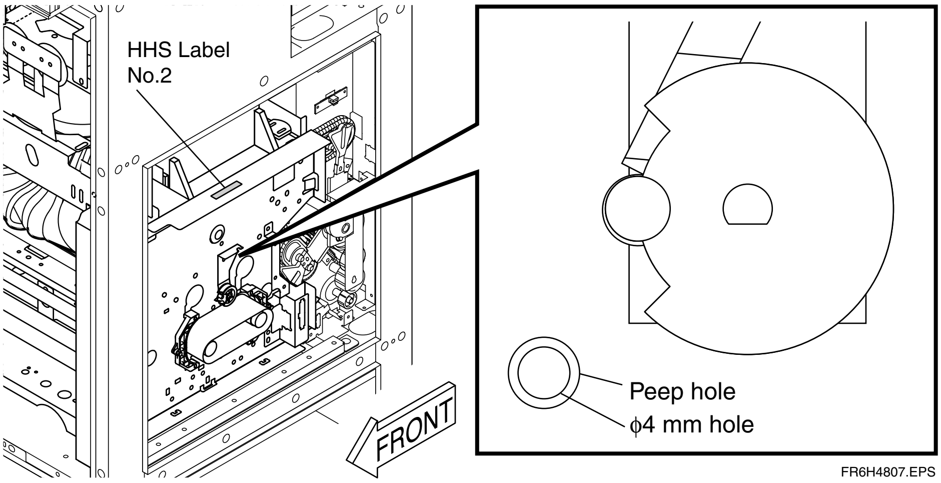
*When installing the light-collecting unit, mount it along the rail.*
*When screwing down the light-collecting unit, secure it in place while pushing it in the direction of the arrow as illustrated below.*

(1) Reinstall the light-collecting unit.


#4
[Connect]
Connector PMT2
PMT12A board
#4
[Connect] Connector PMT1
Light-collecting unit
Light-collecting unit
A
Rail
#3
[Secure]
BR3x6 (x2)
B
Peep hole
CHECK
HHS Label No.2
FRONT
DETAIL A
#2
[Secure] BR3x10
FRONT
DETAIL B
#1 [Secure] BR3x10 (x2)
シュウコウ⇨
シュウコウ⇨
DETAIL B
FR6H4802.EPS

## ■ Check/Adjustment Procedures

(1) While looking into the peep hole, verify that the ϕ4 mm hole is visible.


HHS Label No.2
FRONT
Peep hole
ϕ4 mm hole

FR6H4807.EPS

### ◆ INSTRUCTION ◆

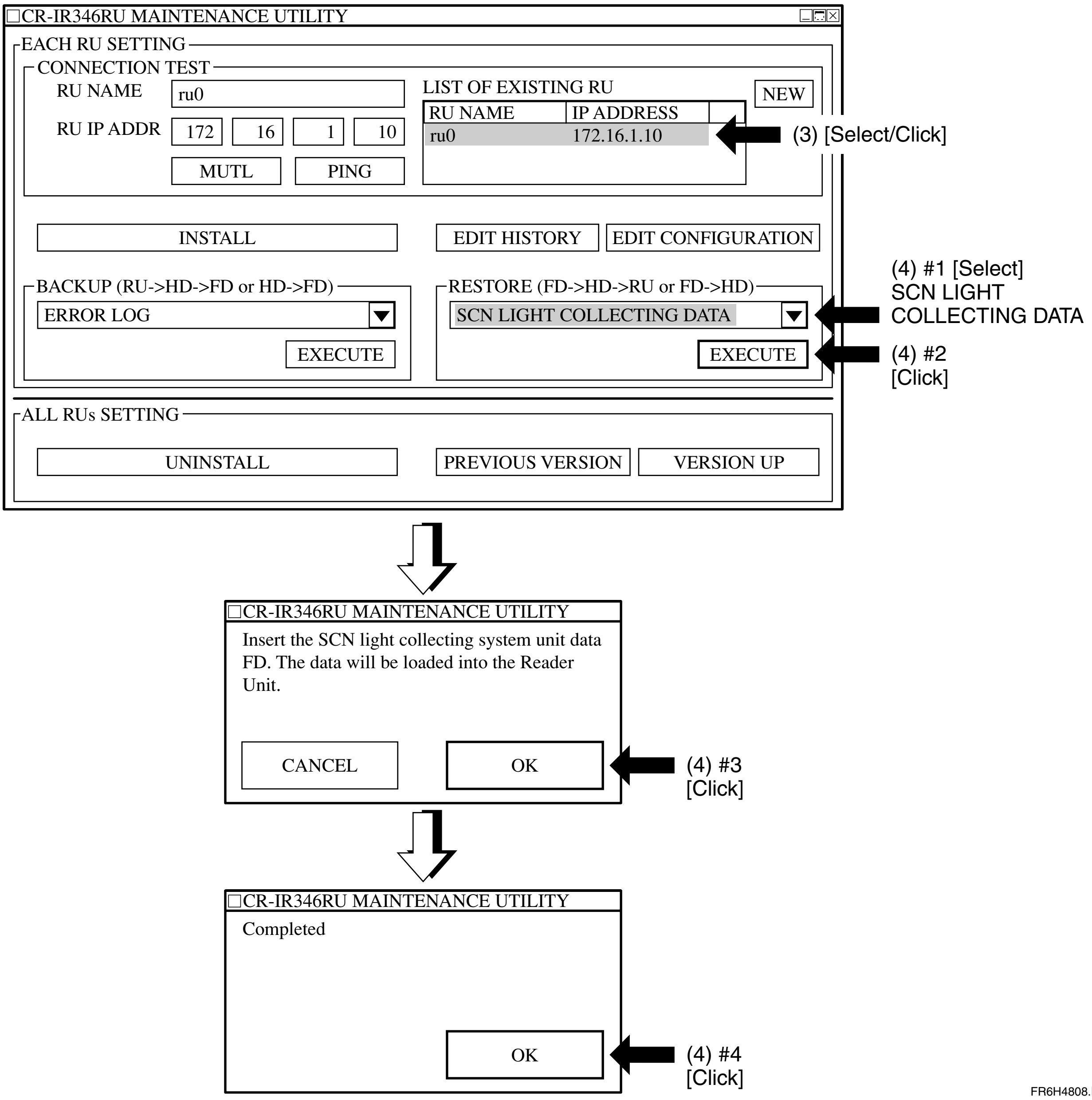
*When the light-collecting unit is replaced with a new one, it is necessary to install the machine-specific data bundled therewith.*
*Take the following steps to install the machine-specific data.*

(2) Set a machine-specific data floppy diskette into the FD drive.

(3) Open the CR-IR346RU MAINTENANCE UTILITY window and select the relevant RU from [LIST OF EXISTING RU].

(4) Install the machine-specific data for the light-collecting unit.

MAINTENANCE UTILITY window



□CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
MUTL
PING
LIST OF EXISTING RU
NEW
RU NAME
IP ADDRESS
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU->HD->FD or HD->FD)
EXECUTE
RESTORE (FD->HD->RU or FD->HD)
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
□CR-IR346RU MAINTENANCE UTILITY
CANCEL
OK
□CR-IR346RU MAINTENANCE UTILITY
OK

RU NAME: ru0

RU IP ADDR: 172 16 1 10

ru0 172.16.1.10

BACKUP (RU->HD->FD or HD->FD): ERROR LOG

RESTORE (FD->HD->RU or FD->HD): SCN LIGHT COLLECTING DATA

(3) [Select/Click]

(4) #1 [Select]
SCN LIGHT
COLLECTING DATA

(4) #2
[Click]

Insert the SCN light collecting system unit data FD. The data will be loaded into the Reader Unit.

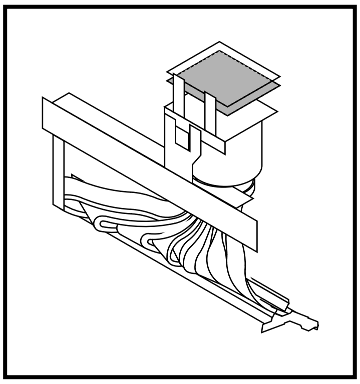
(4) #3
[Click]

Completed

(4) #4
[Click]

FR6H4808.EPS

## 9.2 PMT12A Board



FR6H4851.EPS

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

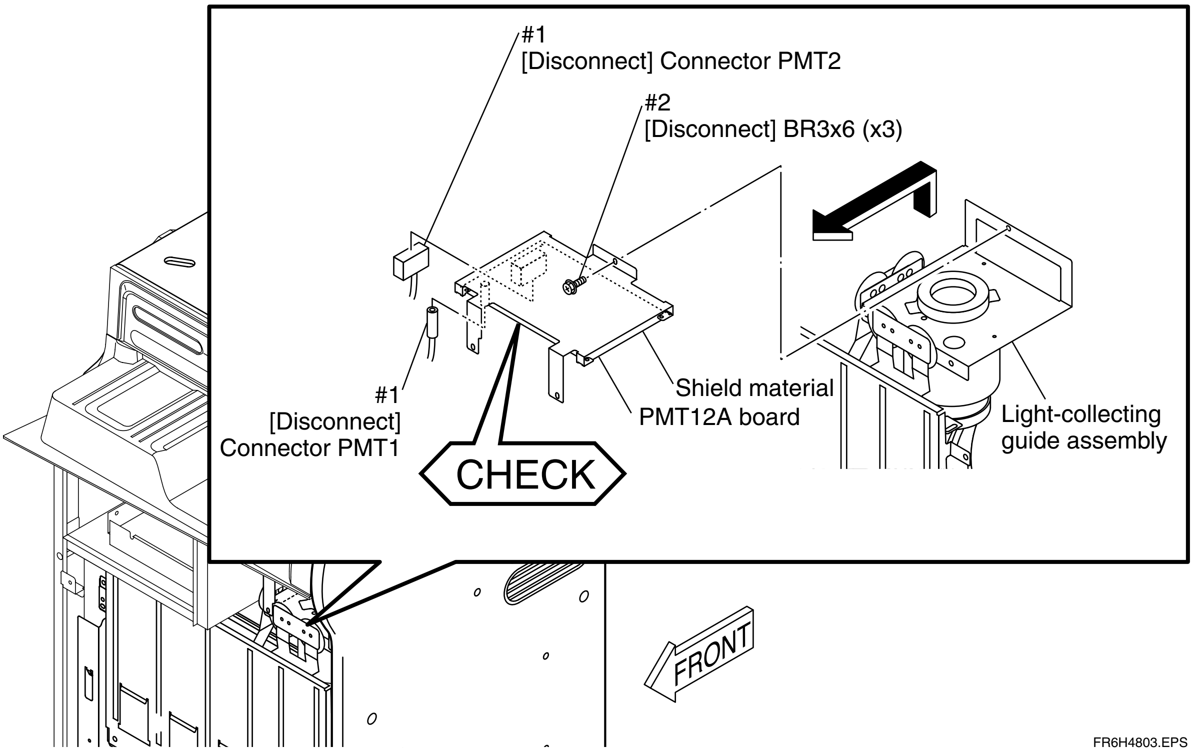
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Top light protect plate

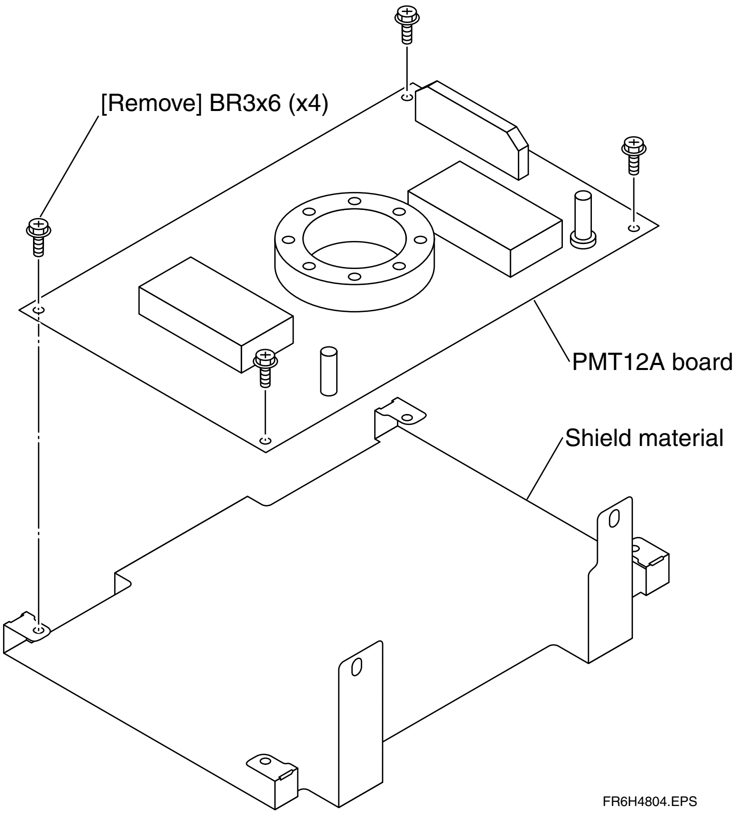
☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the PMT12A board together with the shield material.


#1
[Disconnect] Connector PMT2
#2
[Disconnect] BR3x6 (x3)
#1
[Disconnect]
Connector PMT1
CHECK
Shield material
PMT12A board
Light-collecting
guide assembly
FRONT

FR6H4803.EPS

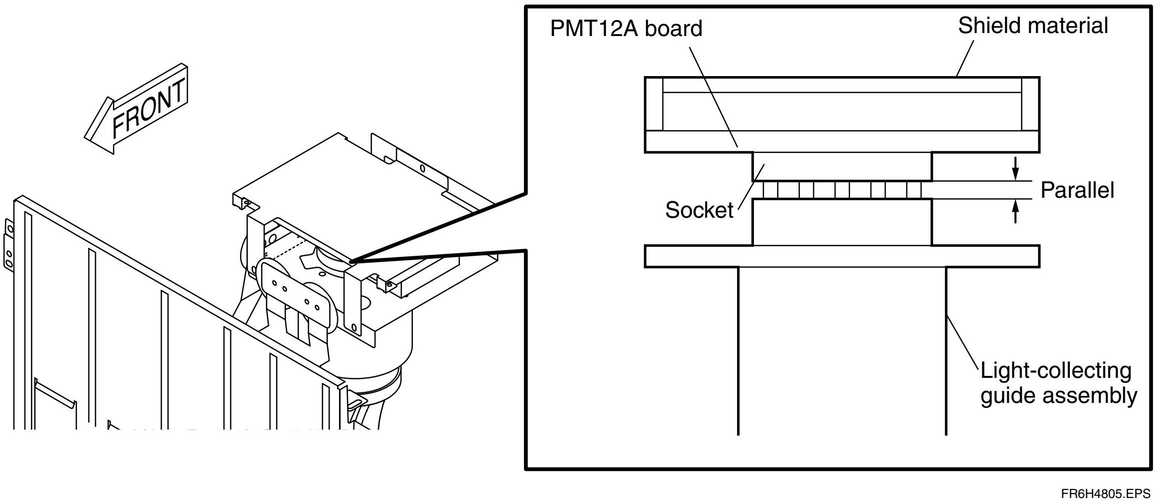
(3) Remove the PMT12A board.


[Remove] BR3x6 (x4)
PMT12A board
Shield material
FR6H4804.EPS

## Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*When installing the PMT12A board, together with the shield material, to the light-collecting guide assembly, ensure that the socket of the PMT12A board is parallel to the connector portion of the light-collecting guide assembly.*


FRONT
PMT12A board
Shield material
Parallel
Socket
Light-collecting guide assembly
FR6H4805.EPS

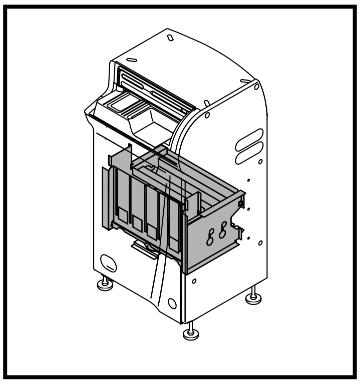
For reinstallation, reverse the removal steps.

## Check/Adjustment Procedures

- Make sure that the light-collecting guide assembly is parallel to the socket of the PMT12A board.

# 10. Removing and Reinstalling the Subscanning Unit

## 10.1 Subscanning Unit



FR6H4963.EPS

### ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ “7.1 Side-Positioning Conveyor”

(2) Remove the light-collecting unit.

☞ “9.1 Light-Collecting Unit”

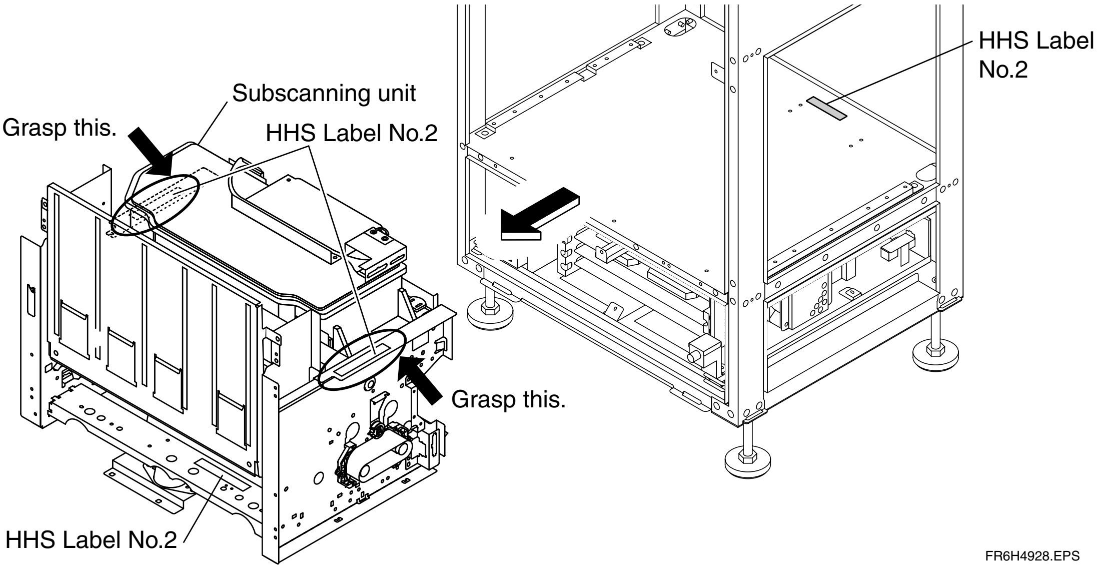
(3) Install the after-reading conveyor cover.

**CAUTION**

*When removing or installing the subscanning unit, exercise due care about your posture to avoid lower-back pain.*

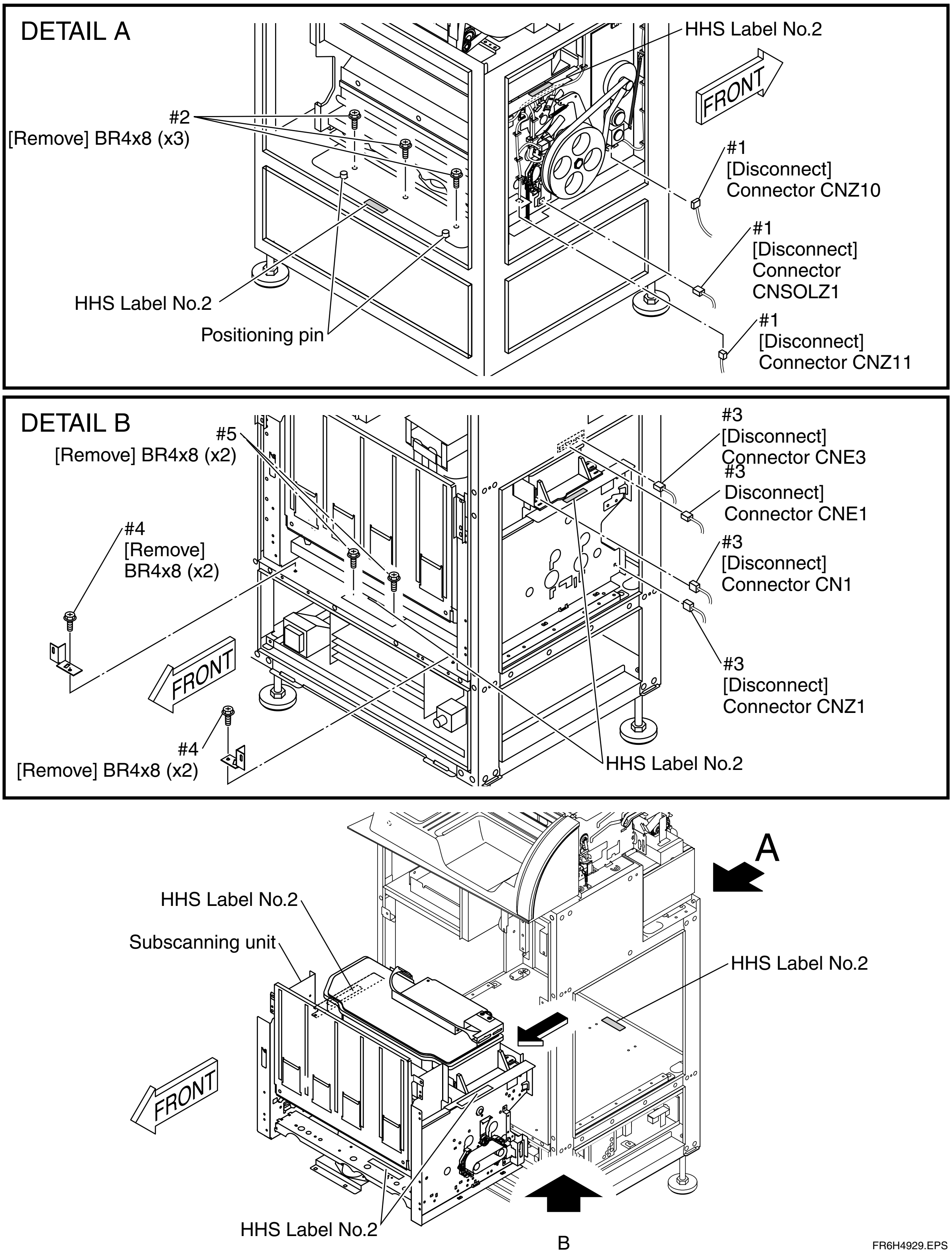
**◆ NOTE ◆**

*When lifting up the subscanning unit, grasp the locations illustrated below.*


Grasp this.
Subscanning unit
HHS Label No.2
Grasp this.
HHS Label No.2
HHS Label No.2

FR6H4928.EPS

(4) Remove the subscanning unit.


DETAIL A
HHS Label No.2
FRONT
#2
[Remove] BR4x8 (x3)
#1
[Disconnect]
Connector CNZ10
#1
[Disconnect]
Connector
CNSOLZ1
HHS Label No.2
Positioning pin
#1
[Disconnect]
Connector CNZ11
DETAIL B
#5
[Remove] BR4x8 (x2)
#3
[Disconnect]
Connector CNE3
#3
Disconnect]
Connector CNE1
#4
[Remove]
BR4x8 (x2)
#3
[Disconnect]
Connector CN1
FRONT
#3
[Disconnect]
Connector CNZ1
#4
[Remove] BR4x8 (x2)
HHS Label No.2
A
HHS Label No.2
Subscanning unit
HHS Label No.2
FRONT
HHS Label No.2
B

FR6H4929.EPS

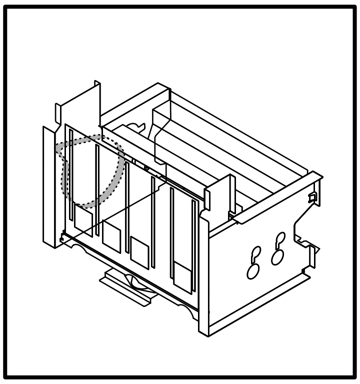
## ■ Reinstallation Procedures

**◆ *INSTRUCTION* ◆**

*While aligning the subscanning against the positioning pins, secure it in place.*

For reinstallation, reverse the removal steps.

## 10.2 Kapton® Belt



FR6H4951.EPS

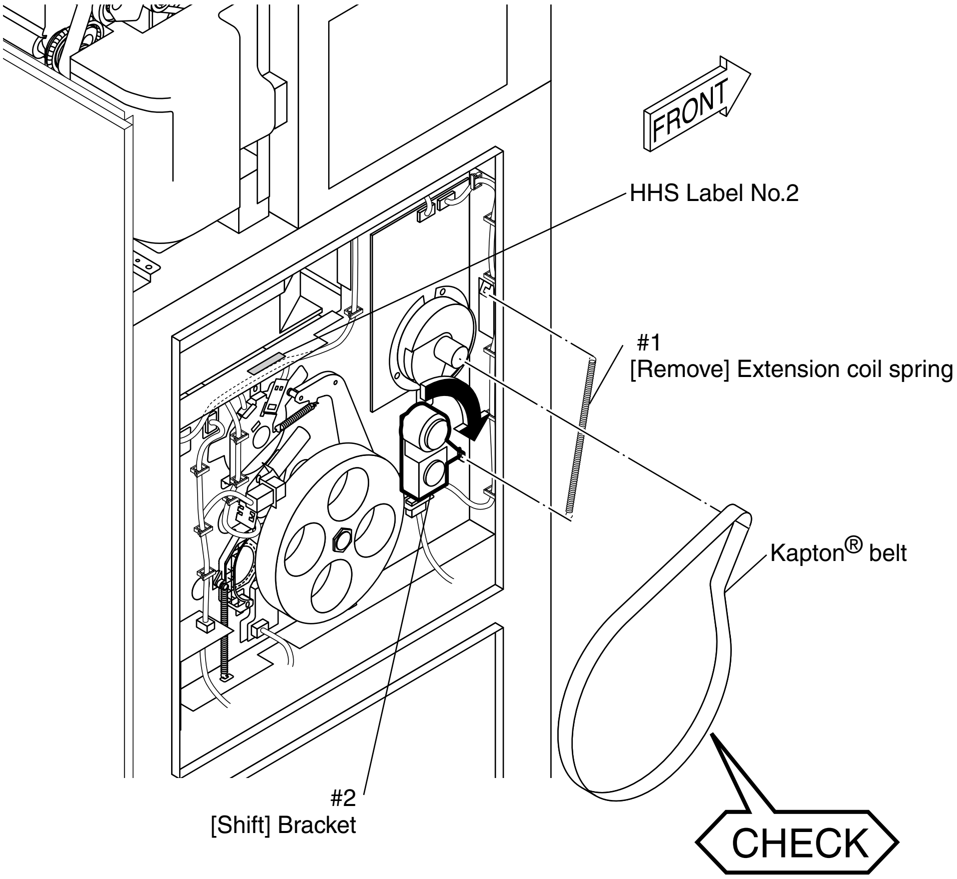
### ■ Removal Procedures

(1) Remove the covers.

- Front cover
- Left-hand side cover

☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the Kapton® belt.

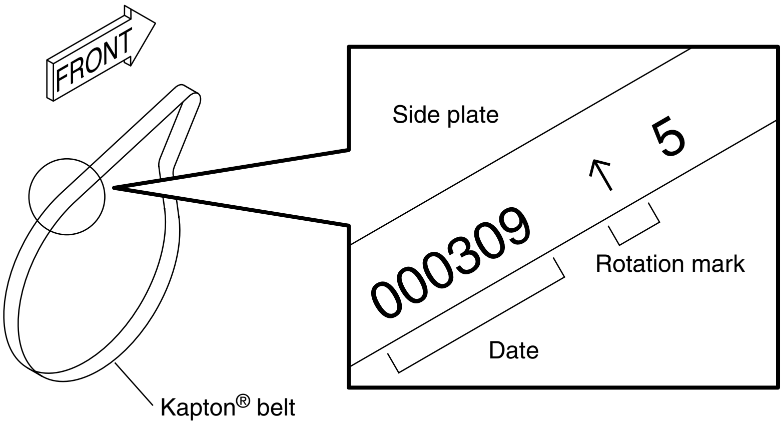

FRONT
HHS Label No.2
#1
[Remove] Extension coil spring
Kapton® belt
#2
[Shift] Bracket
CHECK

FR6H4901.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTIONS* ◆

- *The Kapton® belt should be mounted with its date indicating side up, so that the arrow mark faces the side plate.*
- *After mounting the Kapton® belt, manually rotate the flywheel to verify that the Kapton® belt does not come off.*



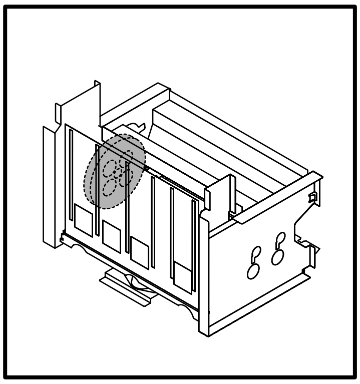
FR6H4902.EPS

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the Kapton® belt has been mounted in a proper orientation.
- Manually rotate the flywheel to verify that the Kapton® belt does not come off.

## 10.3 Flywheel



FR6H4952.EPS

### ■ Removal Procedures

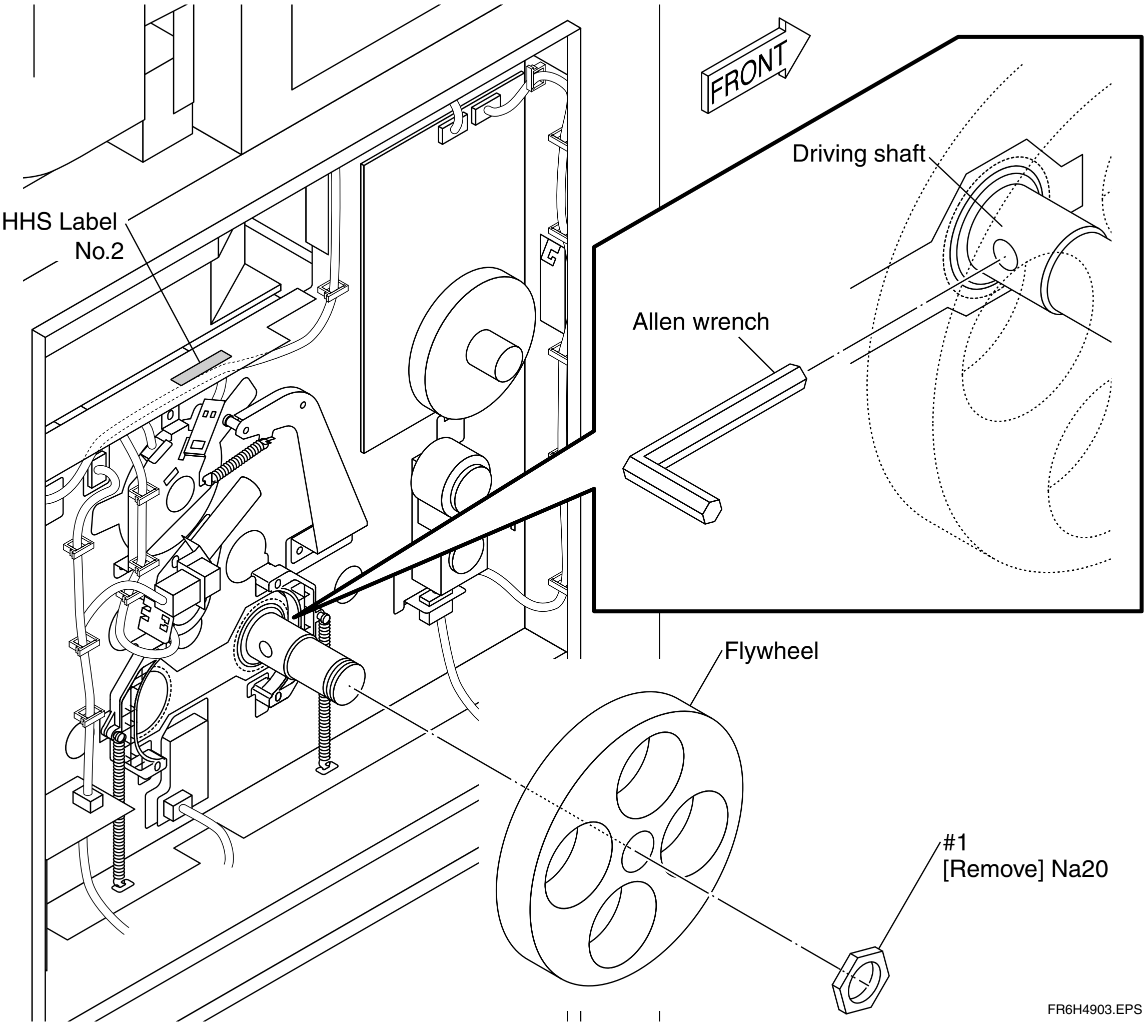
(1) Remove the Kapton® belt.

☞ "10.2 Kapton® Belt"

**◆ *NOTE* ◆**

*Insert an Allen wrench into the hole of the driving shaft to secure the shaft in place, and then remove the nut.*

(2) Remove the flywheel.

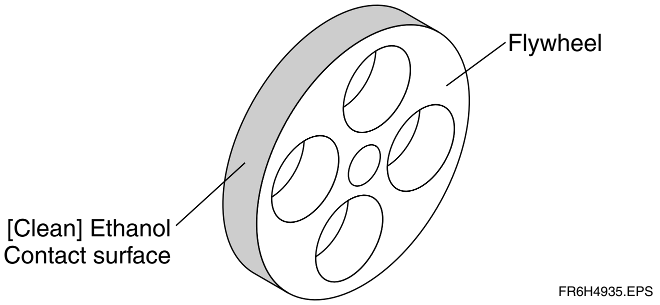

FRONT
Driving shaft
HHS Label No.2
Allen wrench
Flywheel
#1
[Remove] Na20

FR6H4903.EPS

## ■ Reinstallation Procedures

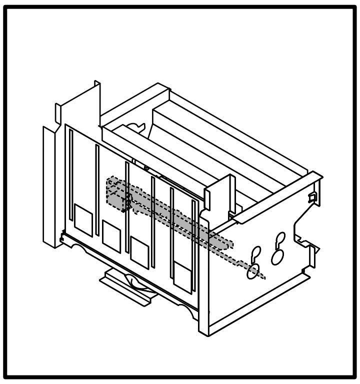
**◆ *NOTES* ◆**

- *Use care not to damage the surface in contact with the Kapton® belt.*
- *Before reinstalling the flywheel, clean the Kapton® belt contacting surface with ethanol.*


Flywheel
[Clean] Ethanol
Contact surface
FR6H4935.EPS

For reinstallation, reverse the removal steps.

# 10.4 Solenoid (SolZ1)



FR6H4959.EPS

## ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ “7.1 Side-Positioning Conveyor”

(2) Remove the flywheel.

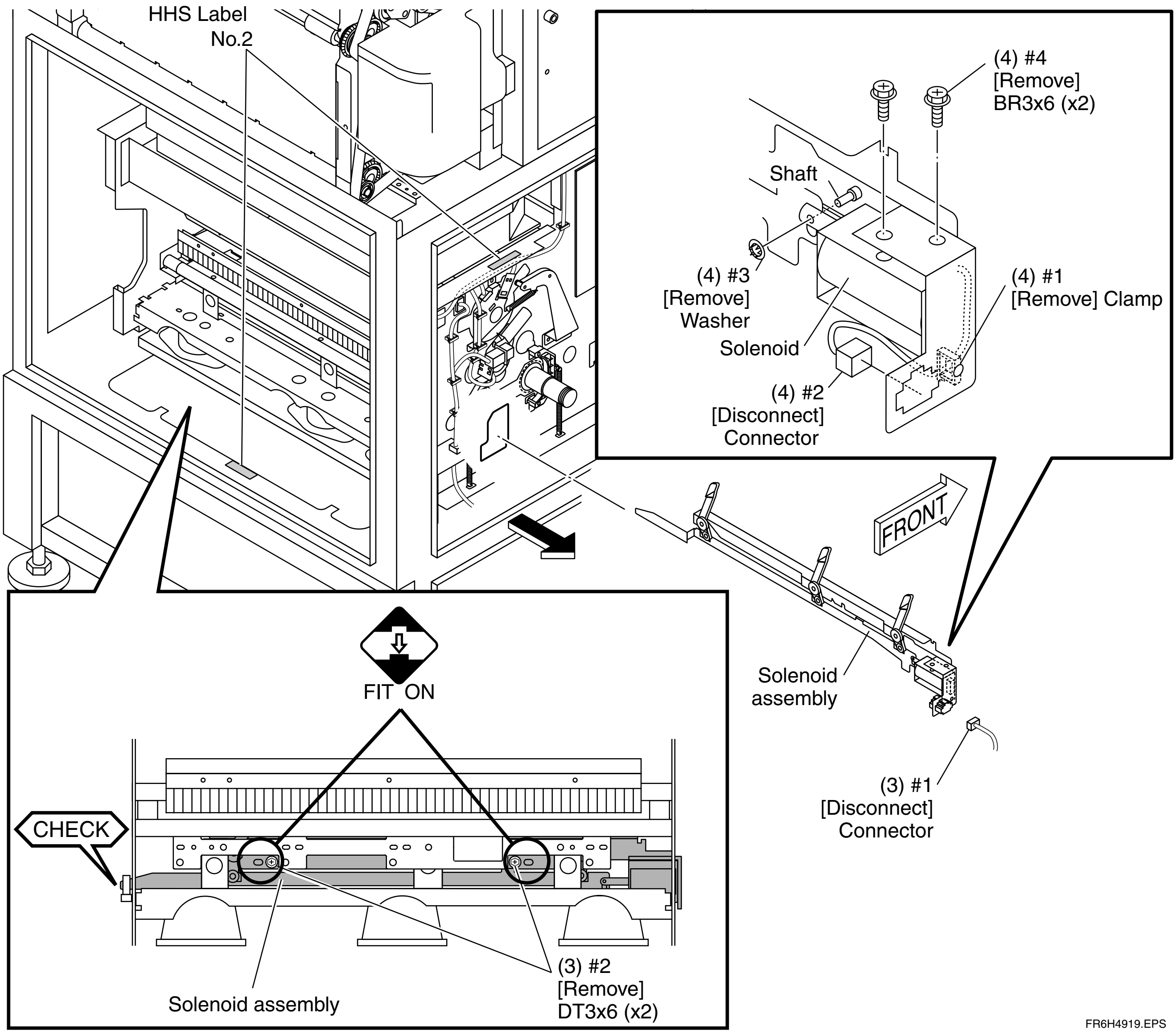
☞ “10.3 Flywheel”

(3) Remove the solenoid assembly.

(4) Remove the solenoid.

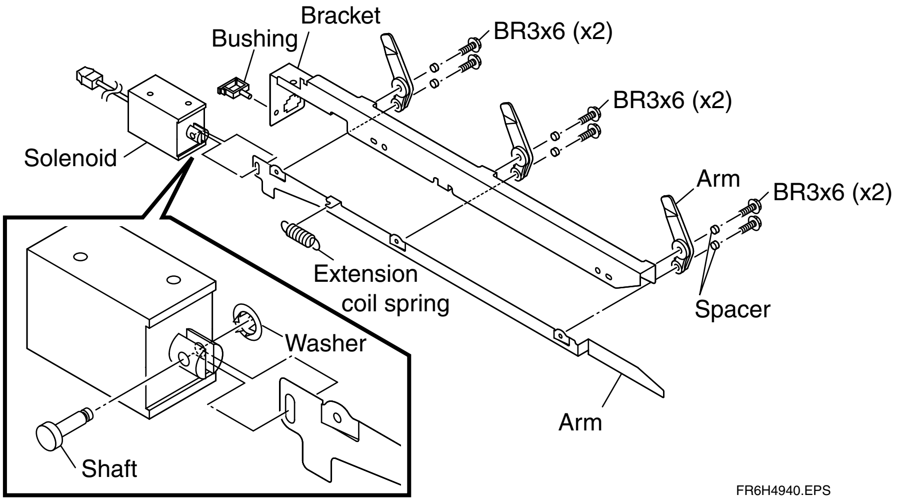
**◆ NOTE ◆**

*During removal and reinstallation of the solenoid assembly, use care to avoid contact between the side of the solenoid and the side plate of the subscanning unit.*


HHS Label
No.2
(4) #4
[Remove]
BR3x6 (x2)
Shaft
(4) #3
[Remove]
Washer
Solenoid
(4) #1
[Remove] Clamp
(4) #2
[Disconnect]
Connector
FRONT
Solenoid
assembly
(3) #1
[Disconnect]
Connector
FIT ON
CHECK
Solenoid assembly
(3) #2
[Remove]
DT3x6 (x2)

FR6H4919.EPS

## ■ Exploded View

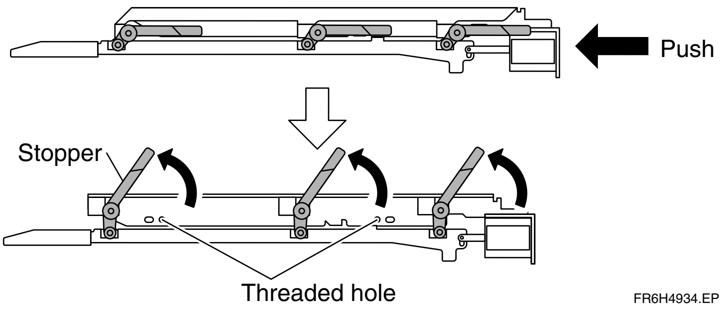

Bracket
Bushing
BR3x6 (x2)
BR3x6 (x2)
Solenoid
Arm
BR3x6 (x2)
Extension coil spring
Washer
Spacer
Shaft
Arm

FR6H4940.EPS

## ■ Reinstallation Procedures

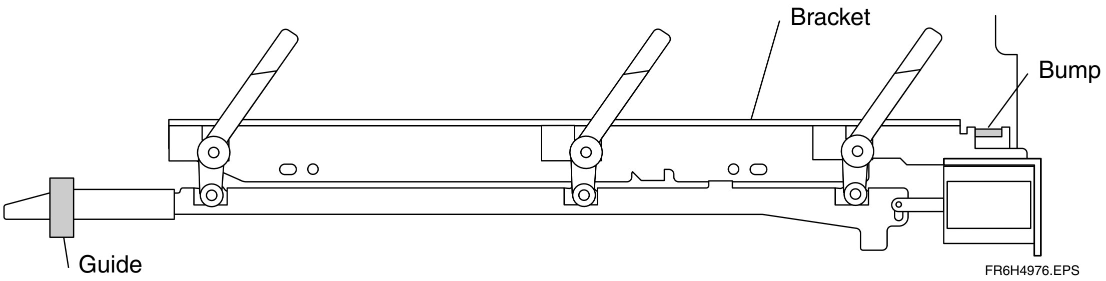
### ◆ NOTES ◆

- *When installing the solenoid assembly, raise the stoppers to gain access to the threaded holes.*


Push
Stopper
Threaded hole

FR6H4934.EPS

- *Make sure that the tip of the arm extends through the guide, and push the bracket of the solenoid assembly against the bump to screw it down.*

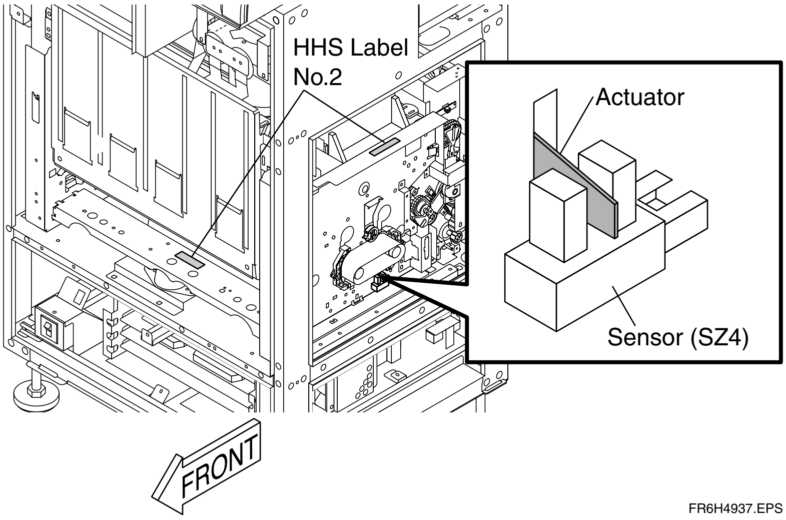

Bracket
Bump
Guide

FR6H4976.EPS

For reinstallation, reverse the removal steps.

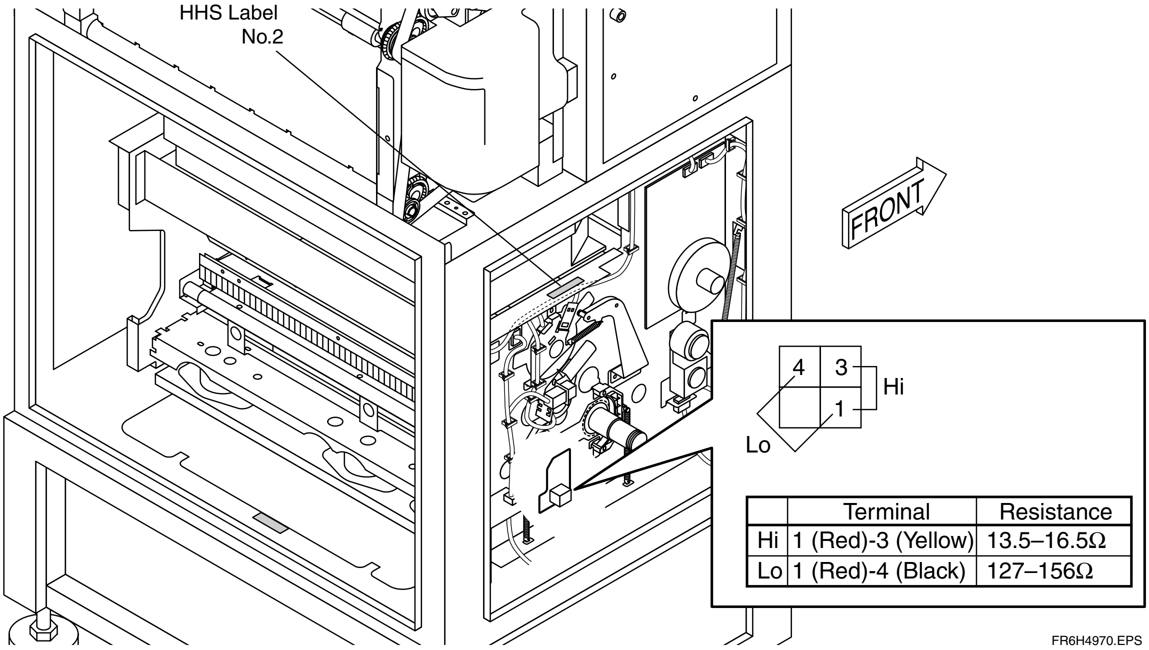
## ■ Check/Adjustment Procedures

- Make sure that the actuator of the solenoid assembly blocks the light path of the sensor (SZ4).


HHS Label
No.2
Actuator
Sensor (SZ4)
FRONT

FR6H4937.EPS

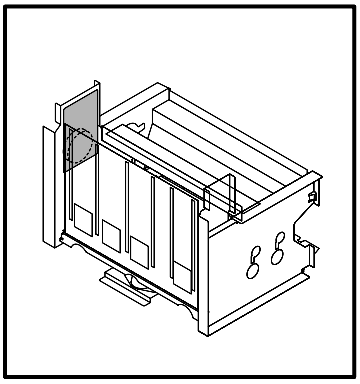
- Measure the resistance value at the connector terminal of the solenoid to verify that the measured resistance value is correct.


HHS Label
No.2
FRONT
4
3
1
Hi
Lo

| | Terminal | Resistance |
|---|---|---|
| Hi | 1 (Red)-3 (Yellow) | 13.5–16.5Ω |
| Lo | 1 (Red)-4 (Black) | 127–156Ω |

FR6H4970.EPS

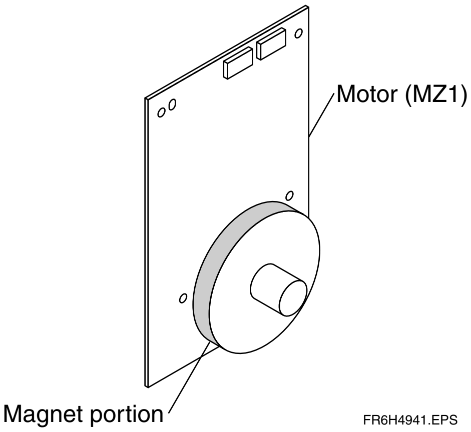
## 10.5 Motor (MZ1)



FR6H4964.EPS

**CAUTIONS**

- *When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*
- *When removing or installing the motor (MZ1), do not use any magnet screwdriver.*
- *Do not touch the magnet portion of the motor (MZ1).*



FR6H4941.EPS

### ◇ REFERENCE ◇

*The screws that retain the motor (MZ1) have different lengths depending on the version of the light-collecting guide assembly.*
*Light-collecting guide assembly 606Y0055 (#20669 or earlier): BR3x6 (x5)*
*Light-collecting guide assembly 606Y0055A (#20670 or later): BR3x10 (x5)*

## ■ Removal Procedures

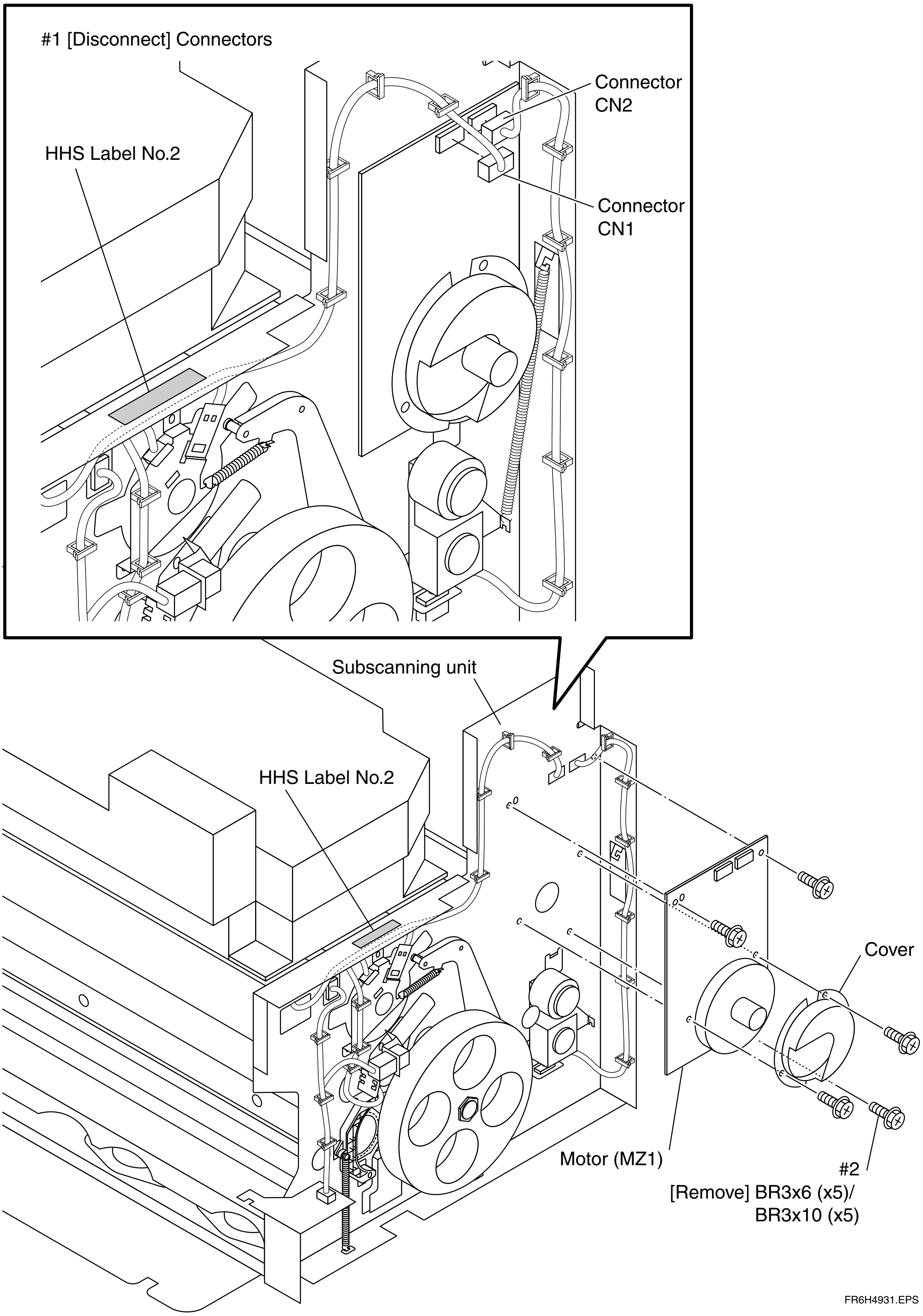
(1) Remove the subscanning unit.

☞ "10.1 Subscanning Unit"

(2) Remove the Kapton® belt.

☞ "10.2 Kapton® Belt"

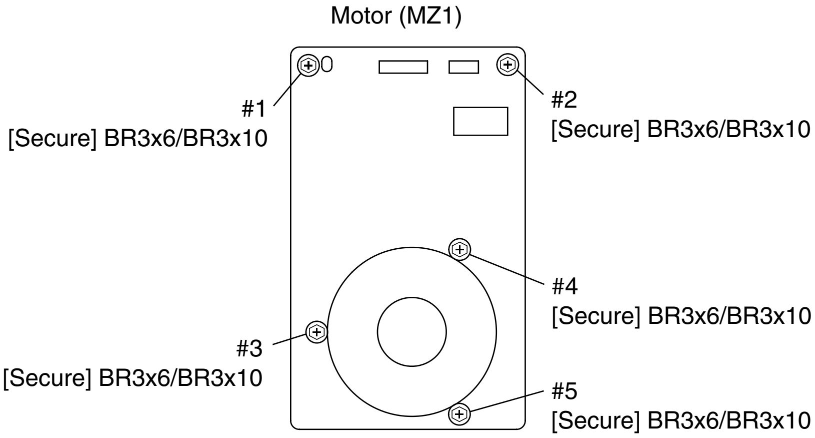
(3) Remove the motor (MZ1).


#1 [Disconnect] Connectors
HHS Label No.2
Connector CN2
Connector CN1
Subscanning unit
HHS Label No.2
Cover
Motor (MZ1)
#2
[Remove] BR3x6 (x5)/
BR3x10 (x5)
FR6H4931.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*When installing the motor (MZ1), loosely tighten the five screws and then securely tighten them in order illustrated below.*


Motor (MZ1)
#1
[Secure] BR3x6/BR3x10
#2
[Secure] BR3x6/BR3x10
#4
[Secure] BR3x6/BR3x10
#3
[Secure] BR3x6/BR3x10
#5
[Secure] BR3x6/BR3x10

FR6H4932.EPS

---

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

If the motor is replaced, perform the following check procedures.

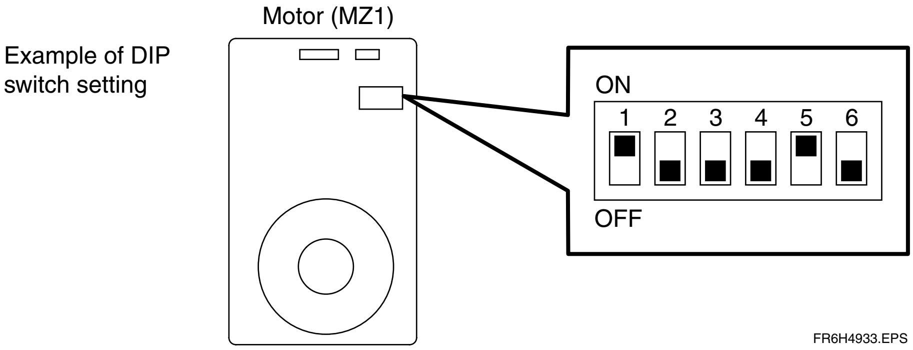
- DIP switch setting
- Preparation for output image (exposure)
- Subscan length check

If subscan length adjustments are needed, make subscan length adjustments as appropriate with reference to the DIP Switch Setting List (Table 1).

- Subscan length adjustment

### ● DIP switch setting

(1) Check the DIP switch setting before replacement, and make the same setting.


Motor (MZ1)
Example of DIP switch setting
ON
1
2
3
4
5
6
OFF

FR6H4933.EPS

## ● Preparation for output image (exposure)

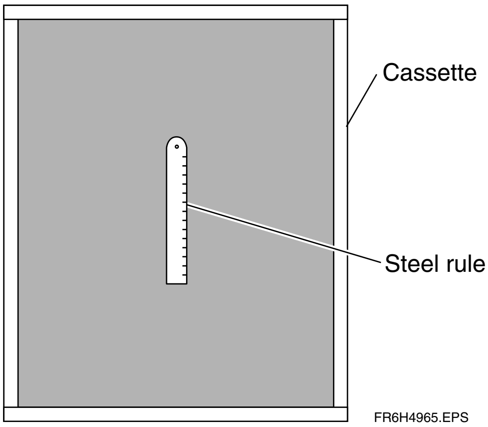
(1) Perform primary erasure on the IP to be used for subscan length check.

☞ “RU Instruction Manual/2.4 When Only Image Erasure is to be Performed (Primary Erasure)”

**◆ *NOTES* ◆**

- *The IP type to be used should be the VI type.*
- *Make sure that no important image data has been exposed on the IP to be used.*

(2) Place a steel rule and expose it at 1 mR.



**◇ *REFERENCE* ◇**

*If the IP cannot be exposed at 1 mR, it should be exposed at 1 mR, with reference to the following exposure conditions.*

*Note, however, that those conditions are for standard IP setup reference.*

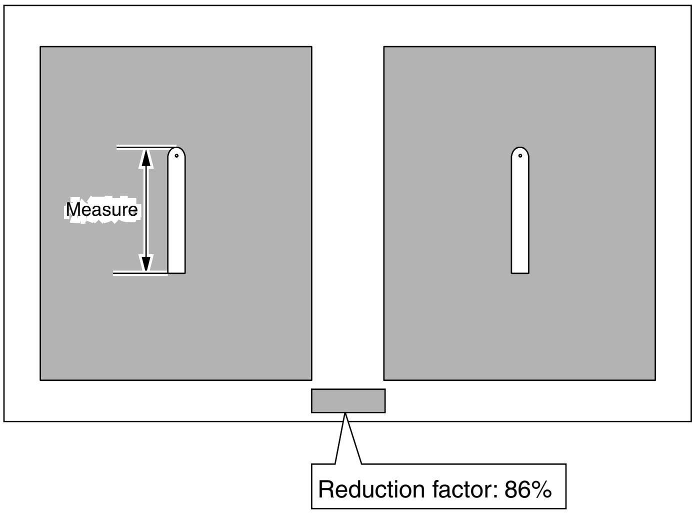
| | |
|---|---|
| *Distance:* | *1.8 m* |
| *Voltage:* | *80 kV* |
| *Amperage:* | *50 mA* |
| *Time:* | *0.013 sec* |

## ● Subscan length check

(1) Output the image exposed at 1 mR.
CL exposure menu selection screen: [TEST] [Image Format]
☞ "RU Instruction Manual/2. Operating Procedures"

(2) Calculate the length (theoretical value) of the steel rule on the film.

Example of reduction factor indication:



Formula: Length (theoretical value) of the steel rule on the film = Length of the steel rule x reduction factor

Example of calculation: 175 mm x 0.86 (86% reduction factor) = 150.5 mm

FR6H4966.EPS

(3) Calculate the allowable value of the subscan length.

Formula: Allowable value of the subscan length = Length of the steel rule (theoretical value) x specified value (±0.6%)

Example of calculation: 150.5 mm x 0.006 (±0.6%) = ±0.9 mm

⬇

149.6 mm ≤ Allowable value ≤ 151.4 mm

FR6H4968.EPS

(4) Measure the length of the steel rule (actual measurement) of the calipers on the output film, and verify that it is within the allowable value calculated.

149.6 mm ≤ Actual measurement ≤ 151.4 mm

**◆ *NOTE* ◆**

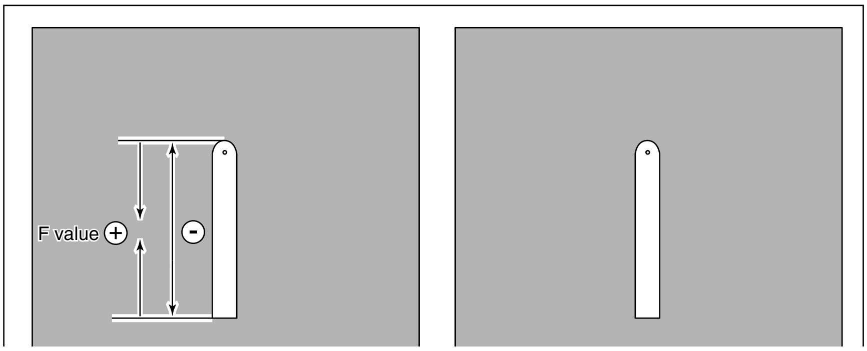
*If the subscan length is beyond the allowable value, make subscan length adjustments (i.e., change the DIP switch setting), as appropriate.*

## ● Subscan length adjustment

(1) With reference to the DIP Switch Setting List (Table 1), change the DIP switch setting.

**◇ *REFERENCE* ◇**

*Changing the “speed fine-adjustment setup factor” in the positive (+) direction will cause the F value to decrease, while changing it in the negative (-) direction will cause the F value to increase.*



FR6H4967.EPS

DIP Switch Setting List (Table 1)

0: Switch ON, 1: Switch OFF

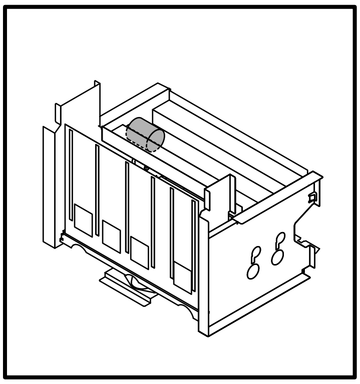
| Switch | | | | | | Speed fine-adjustment setup factor (%) |
|---|---|---|---|---|---|---|
| S6 | S5 | S4 | S3 | S2 | S1 | |
| 0 | 0 | 0 | 1 | 1 | 0 | -1.6 |
| 1 | 0 | 0 | 1 | 1 | 0 | -1.5 |
| 0 | 1 | 0 | 1 | 1 | 0 | -1.4 |
| 1 | 1 | 0 | 1 | 1 | 0 | -1.3 |
| 0 | 0 | 1 | 1 | 1 | 0 | -1.2 |
| 1 | 0 | 1 | 1 | 1 | 0 | -1.1 |
| 0 | 1 | 1 | 1 | 1 | 0 | -1.0 |
| 1 | 1 | 1 | 1 | 1 | 0 | -0.9 |
| 0 | 0 | 0 | 0 | 0 | 1 | -0.8 |
| 1 | 0 | 0 | 0 | 0 | 1 | -0.7 |
| 0 | 1 | 0 | 0 | 0 | 1 | -0.6 |
| 1 | 1 | 0 | 0 | 0 | 1 | -0.5 |
| 0 | 0 | 1 | 0 | 0 | 1 | -0.4 |
| 1 | 0 | 1 | 0 | 0 | 1 | -0.3 |
| 0 | 1 | 1 | 0 | 0 | 1 | -0.2 |
| 1 | 1 | 1 | 0 | 0 | 1 | -0.1 |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 1 | 0 | 0 | 1 | 0 | 1 | +0.1 |
| 0 | 1 | 0 | 1 | 0 | 1 | +0.2 |
| 1 | 1 | 0 | 1 | 0 | 1 | +0.3 |
| 0 | 0 | 1 | 1 | 0 | 1 | +0.4 |
| 1 | 0 | 1 | 1 | 0 | 1 | +0.5 |
| 0 | 1 | 1 | 1 | 0 | 1 | +0.6 |
| 1 | 1 | 1 | 1 | 0 | 1 | +0.7 |
| 0 | 0 | 0 | 0 | 1 | 1 | +0.8 |
| 1 | 0 | 0 | 0 | 1 | 1 | +0.9 |
| 0 | 1 | 0 | 0 | 1 | 1 | +1.0 |
| 1 | 1 | 0 | 0 | 1 | 1 | +1.1 |
| 0 | 0 | 1 | 0 | 1 | 1 | +1.2 |
| 1 | 0 | 1 | 0 | 1 | 1 | +1.3 |
| 0 | 1 | 1 | 0 | 1 | 1 | +1.4 |
| 1 | 1 | 1 | 0 | 1 | 1 | +1.5 |
| 0 | 0 | 0 | 1 | 1 | 1 | +1.6 |

TR6H4901.EPS

(2) Check the subscan length.

☞ “● Subscan length check”

## 10.6 Motor (MZ2)



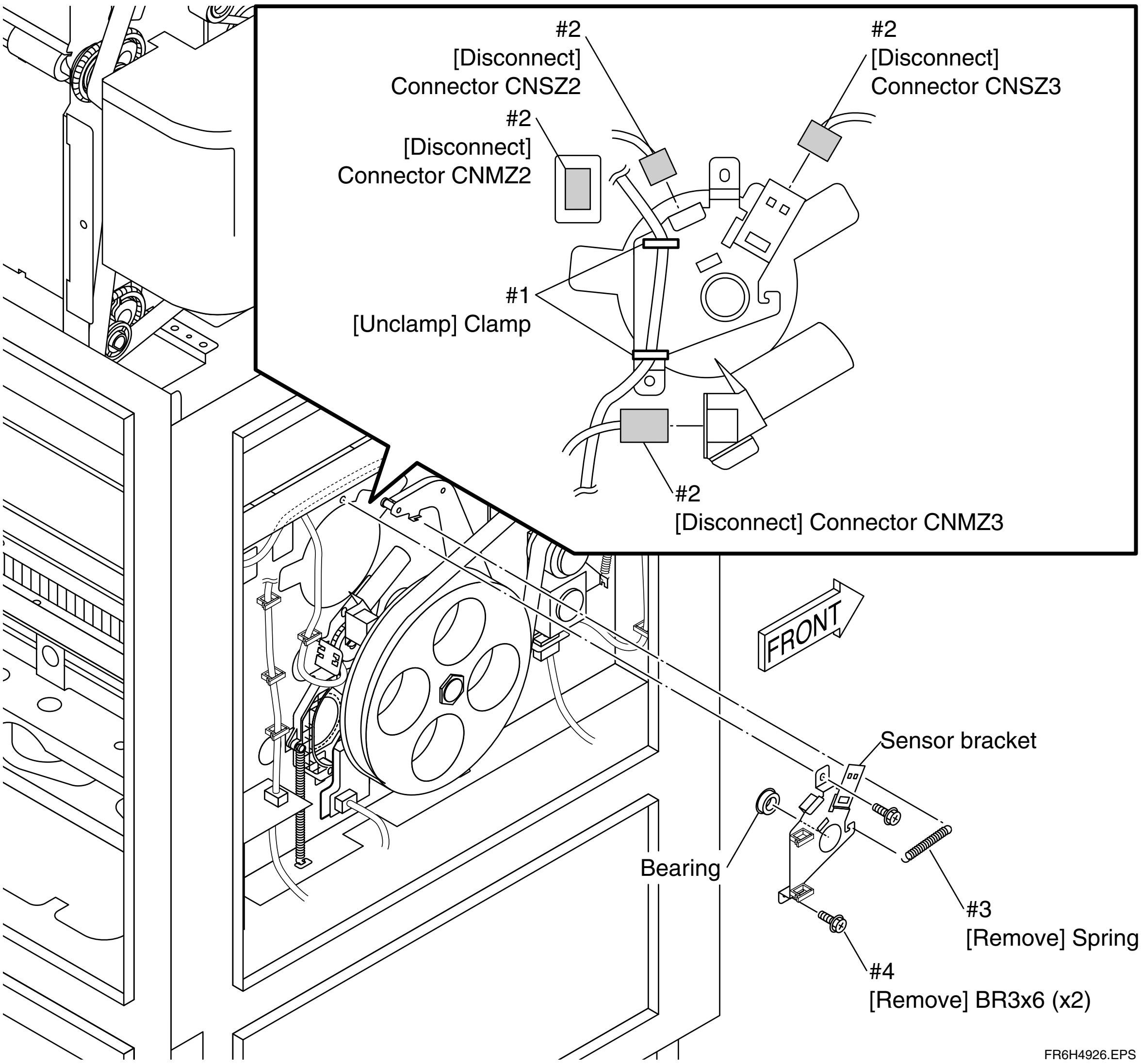
FR6H4962.EPS

### ■ Removal Procedures

(1) Remove the scanning optics unit.

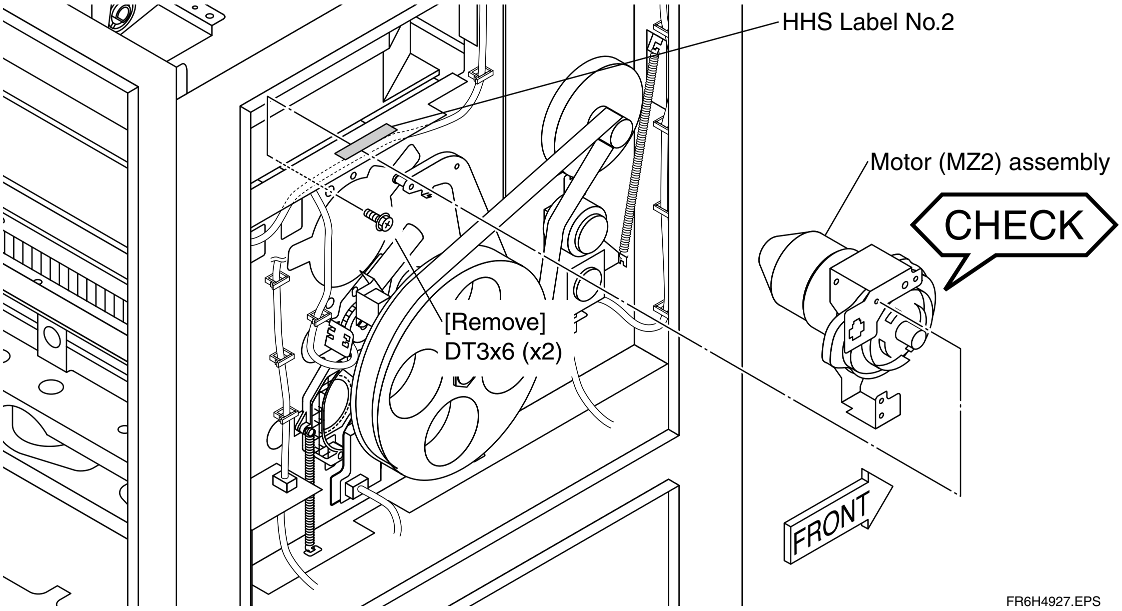
☞ “8.1 Scanning Optics Unit”

(2) Remove the sensor bracket.

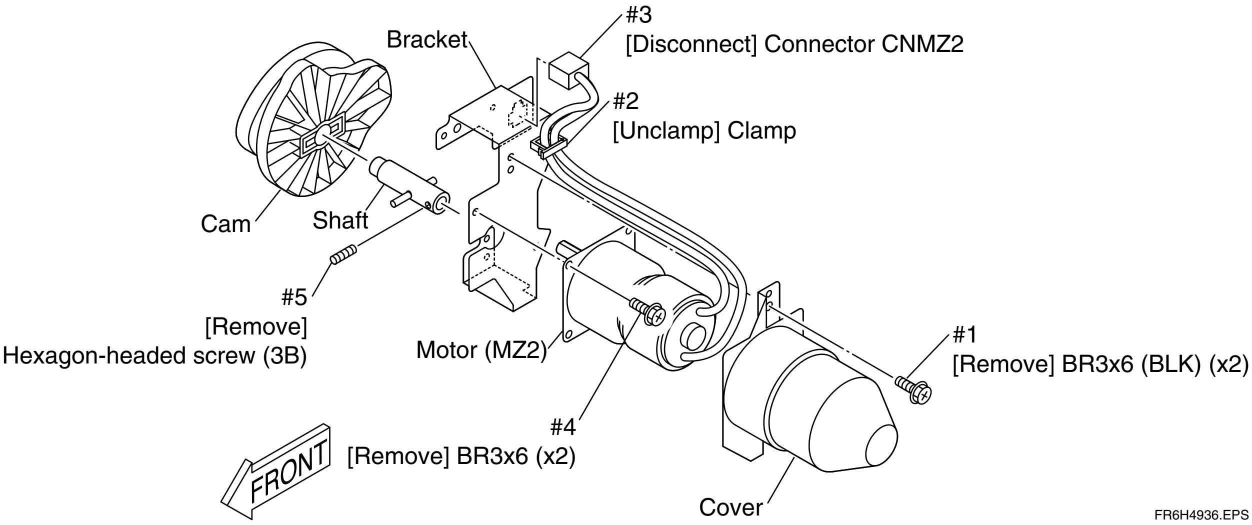

#2
[Disconnect]
Connector CNSZ2
#2
[Disconnect]
Connector CNSZ3
#2
[Disconnect]
Connector CNMZ2
#1
[Unclamp] Clamp
#2
[Disconnect] Connector CNMZ3
FRONT
Sensor bracket
Bearing
#3
[Remove] Spring
#4
[Remove] BR3x6 (x2)

FR6H4926.EPS

(3) Remove the motor (MZ2) assembly.


HHS Label No.2
Motor (MZ2) assembly
CHECK
[Remove]
DT3x6 (x2)
FRONT
FR6H4927.EPS

(4) Remove the motor (MZ2).

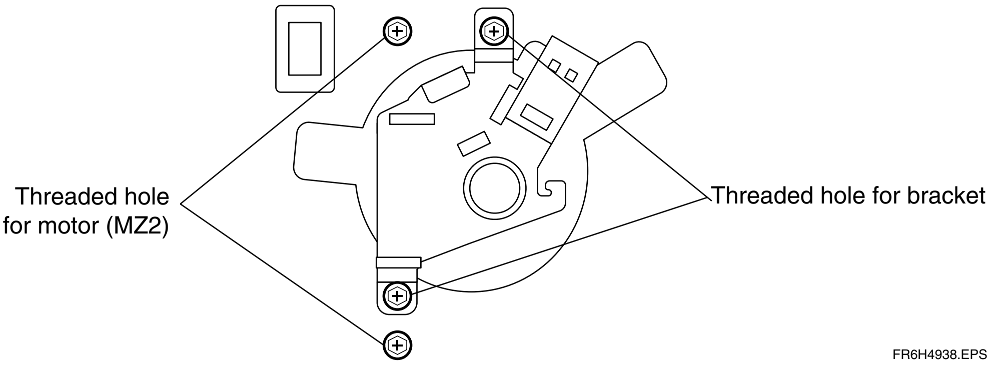

#3
[Disconnect] Connector CNMZ2
Bracket
#2
[Unclamp] Clamp
Cam
Shaft
#5
[Remove]
Hexagon-headed screw (3B)
Motor (MZ2)
#1
[Remove] BR3x6 (BLK) (x2)
#4
[Remove] BR3x6 (x2)
FRONT
Cover
FR6H4936.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

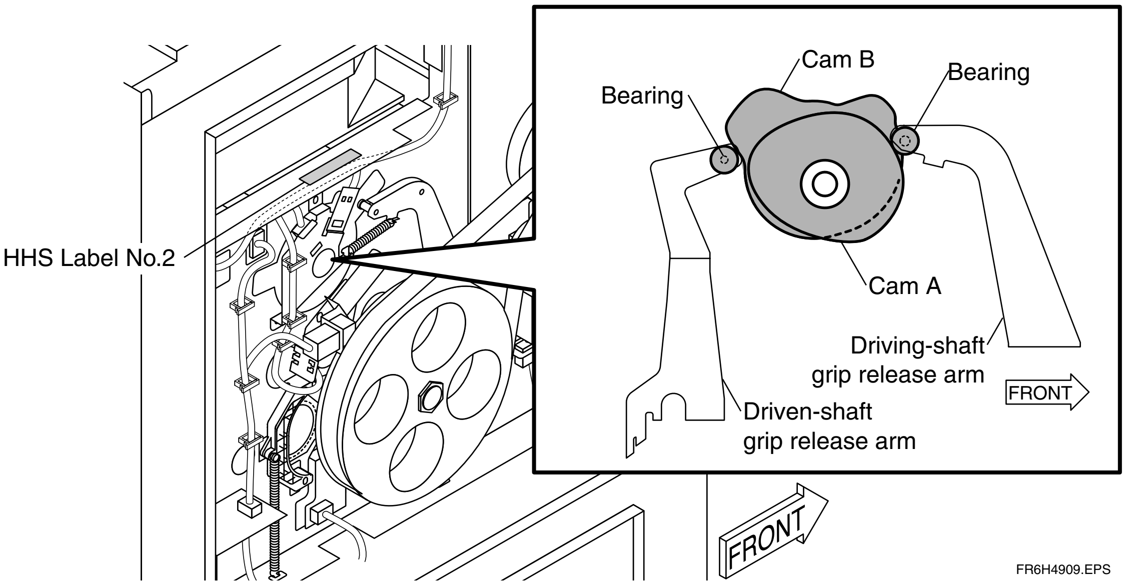
### ◇ REFERENCE ◇

*The threaded holes for mounting the motor (MZ2) assembly are adjacent to the threaded holes for mounting the sensor bracket.*
*With reference to the illustration below, install the motor (MZ2) assembly and sensor bracket as appropriate.*


Threaded hole for motor (MZ2)
Threaded hole for bracket
FR6H4938.EPS

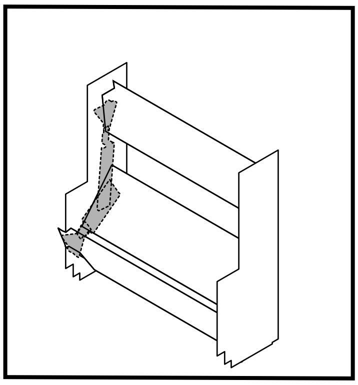
## ■ Check/Adjustment Procedures

- Make sure that the bearing for the driving-shaft grip release arm is brought into contact with the outer periphery of the cam A and B.


HHS Label No.2
Bearing
Cam B
Bearing
Cam A
Driving-shaft grip release arm
Driven-shaft grip release arm
FRONT
FRONT
FR6H4909.EPS

*BLANK PAGE*

# 10.7 Motor (MZ3)



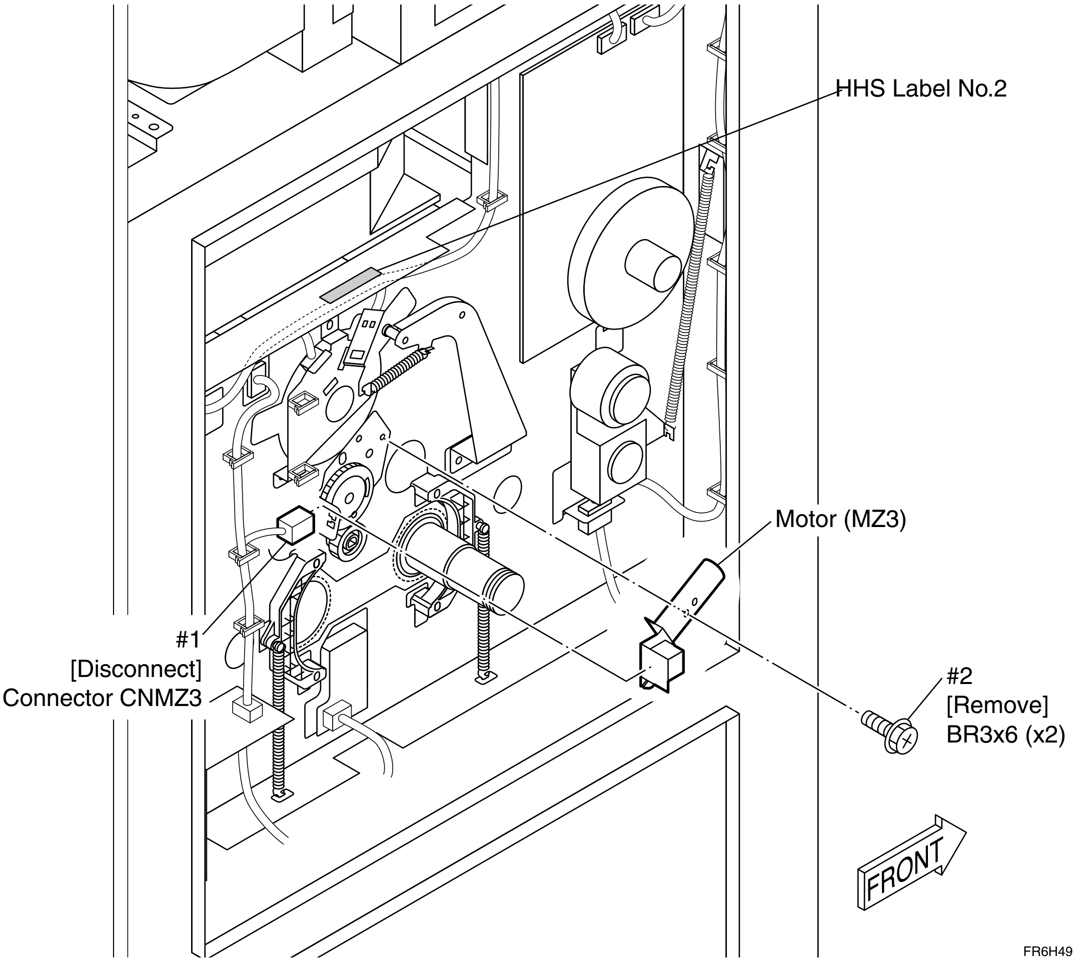
FR6H4653.EPS

## ■ Removal Procedures

(1) Remove the flywheel.

☞ "10.3 Flywheel"

(2) Remove the motor (MZ3).


HHS Label No.2
Motor (MZ3)
#1
[Disconnect]
Connector CNMZ3
#2
[Remove]
BR3x6 (x2)
FRONT

FR6H4904.EPS

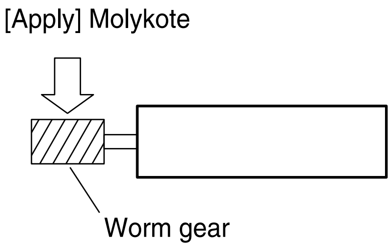
## ■ Reinstallation Procedures

(1) Apply Molykote to the worm gear.

When mounting the MZ3, use Molykote as indicated below.

- Made by Dow Corning
- Type

| | |
|---|---|
| JPN/USA | Molykote (EM30L GREASE) |
| Europe | Molykote (PG30L GREASE) |



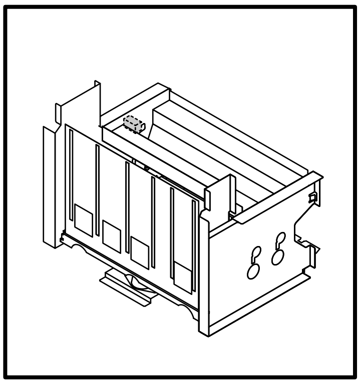
FR6H4D63.EPS

**◆ *NOTE* ◆**

*When mounting the MZ3, apply a grain size of Molykote to the worm gear. Otherwise, an error (13395) might occur.*

(2) For reinstallation, reverse the removal steps.

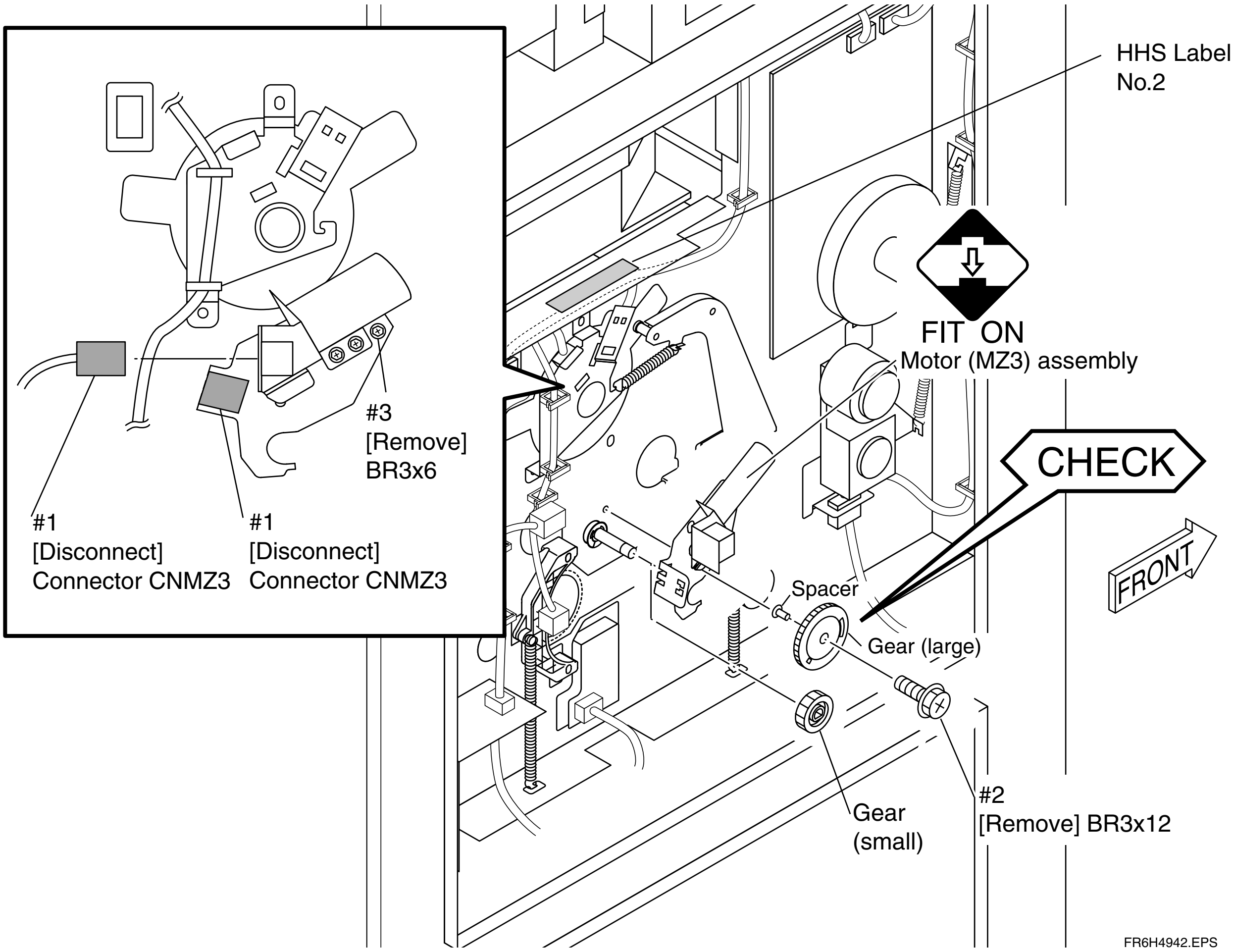
## 10.8 Sensor (SZ5)



FR6H4954.EPS

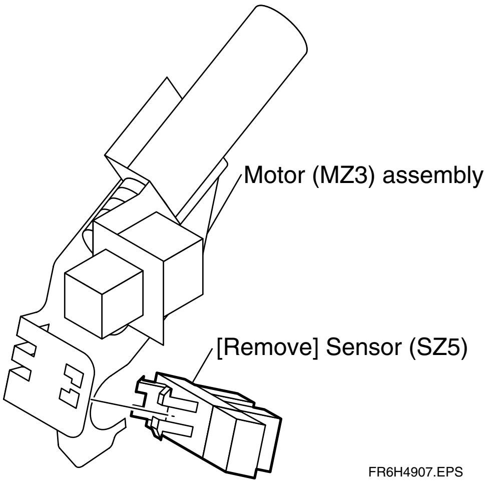
### ■ Removal Procedures

(1) Remove the motor (MZ3) assembly.


HHS Label
No.2
FIT ON
Motor (MZ3) assembly
CHECK
FRONT
Spacer
Gear (large)
Gear
(small)
#2
[Remove] BR3x12
#3
[Remove]
BR3x6
#1
[Disconnect]
Connector CNMZ3
#1
[Disconnect]
Connector CNMZ3

FR6H4942.EPS

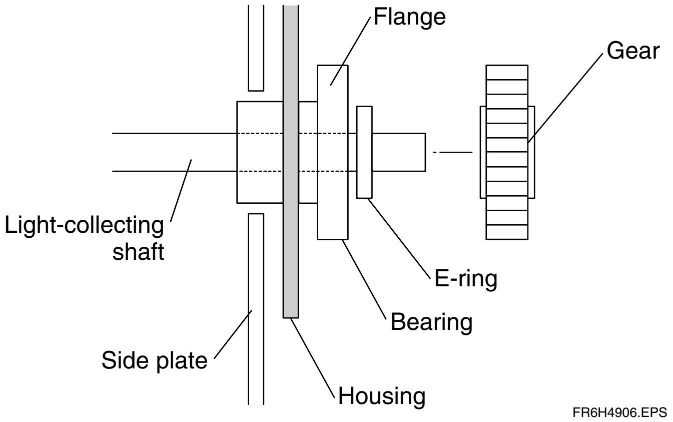
(2) Remove the sensor (SZ5).


Motor (MZ3) assembly
[Remove] Sensor (SZ5)
FR6H4907.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

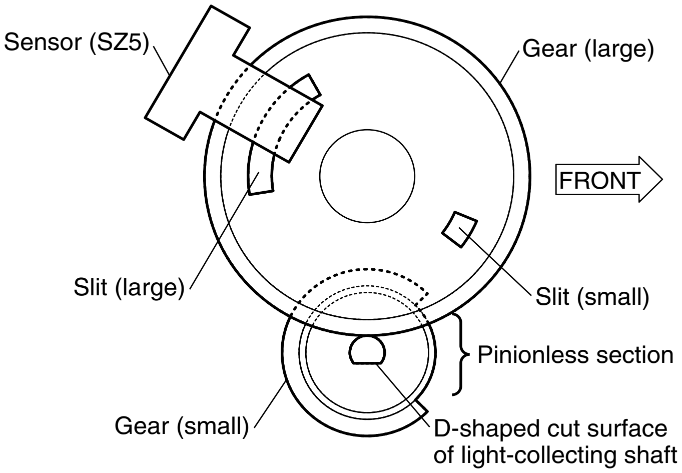
*When installing the motor assembly, ensure that the housing of the motor assembly is located between the flange of the bearing and the side plate.*


Flange
Gear
Light-collecting shaft
E-ring
Bearing
Side plate
Housing

FR6H4906.EPS

### ◆ *INSTRUCTION* ◆

*Refer to the illustration below when mounting the gear (large) and gear (small).*


Sensor (SZ5)
Gear (large)
FRONT
Slit (large)
Slit (small)
Pinionless section
Gear (small)
D-shaped cut surface of light-collecting shaft

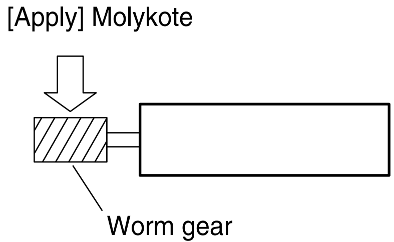
FR6H4914.EPS

(1) Apply Molykote to the worm gear.

When mounting the MZ3, use Molykote as indicated below.

- Made by Dow Corning
- Type

| | |
|---|---|
| JPN/USA | Molykote (EM30L GREASE) |
| Europe | Molykote (PG30L GREASE) |



FR6H4D63.EPS

◆ ***NOTE*** ◆

*When mounting the MZ3, apply a grain size of Molykote to the worm gear. Otherwise, an error (13395) might occur.*

(2) For reinstallation, reverse the removal steps.

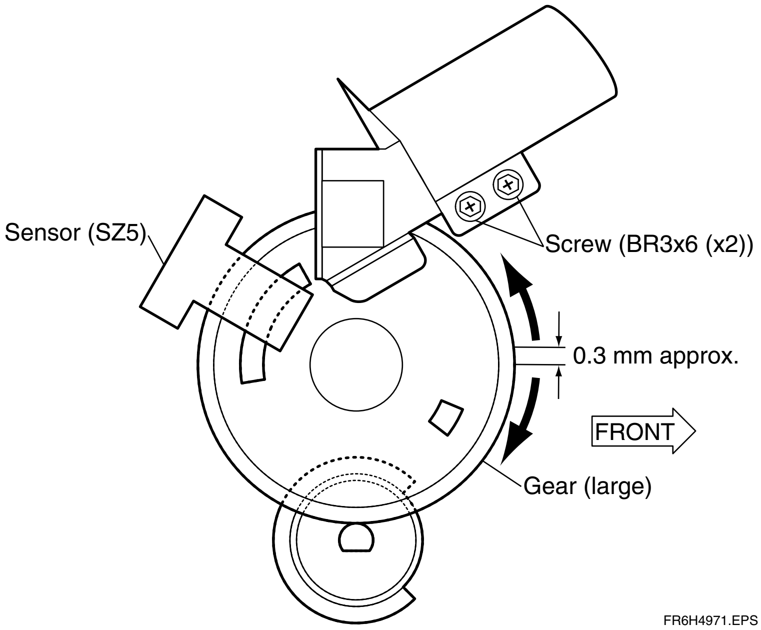
## ■ Check/Adjustment Procedures

(1) Check the engagement between the gear (large) and the worm gear of the motor (MZ3).

GOOD: There should be some backlash (about 0.3 mm).

NG: There is no backlash (the gear (large) and the worm gear of the motor (MZ3) move).

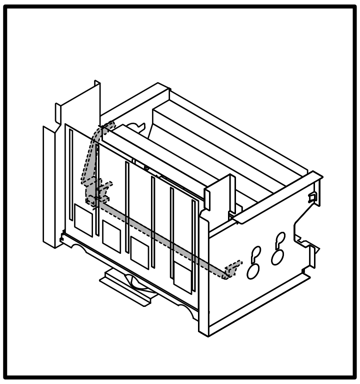
If the engagement between the gears is inappropriate, loosen the screws (BR3x6 (x2)) that retain the motor (MZ3). and adjust the engagement as appropriate.



FR6H4971.EPS

(2) Power ON the CL/RU, and verify that a dust removal operation failure or dust removal function lock error does not occur.

## 10.9 Driving-Shaft Grip Release Arm



FR6H4960.EPS

### ■ Removal Procedures

(1) Remove the covers.

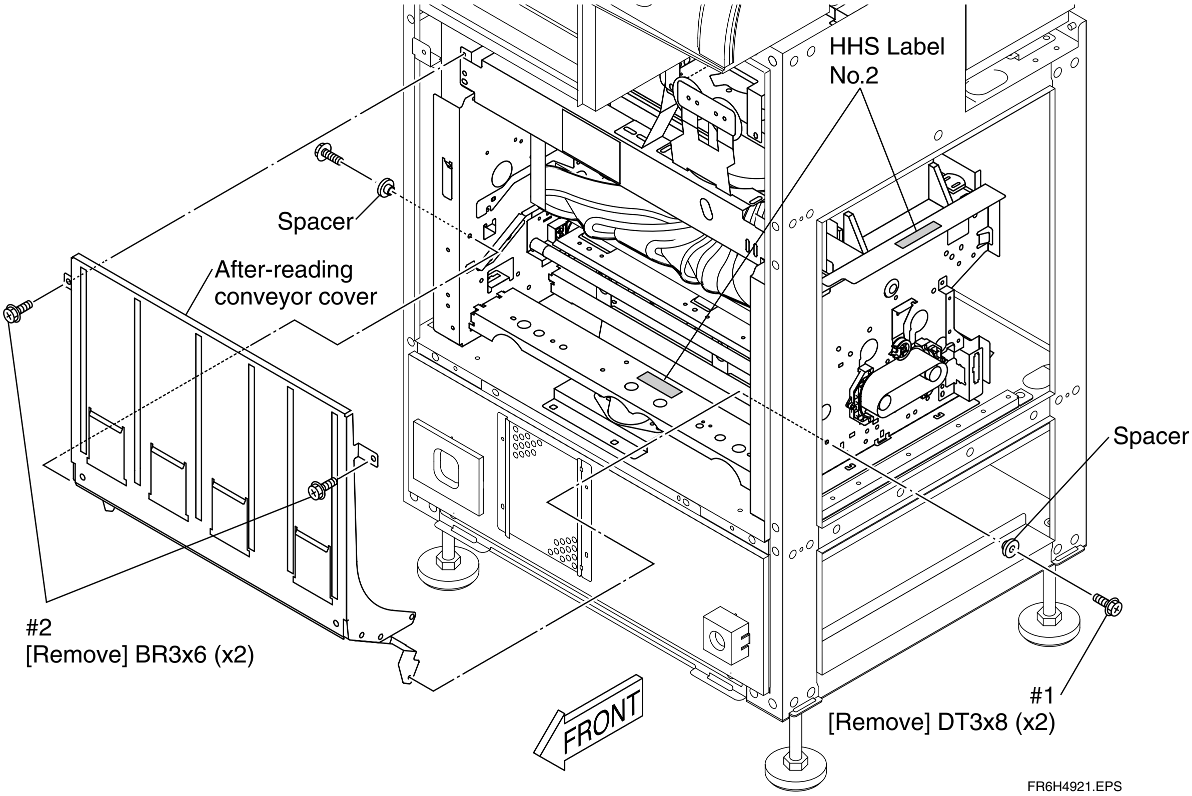
- Front cover
- Top light protect plate
- Left-hand side cover
- Right-hand side cover

☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the flywheel.

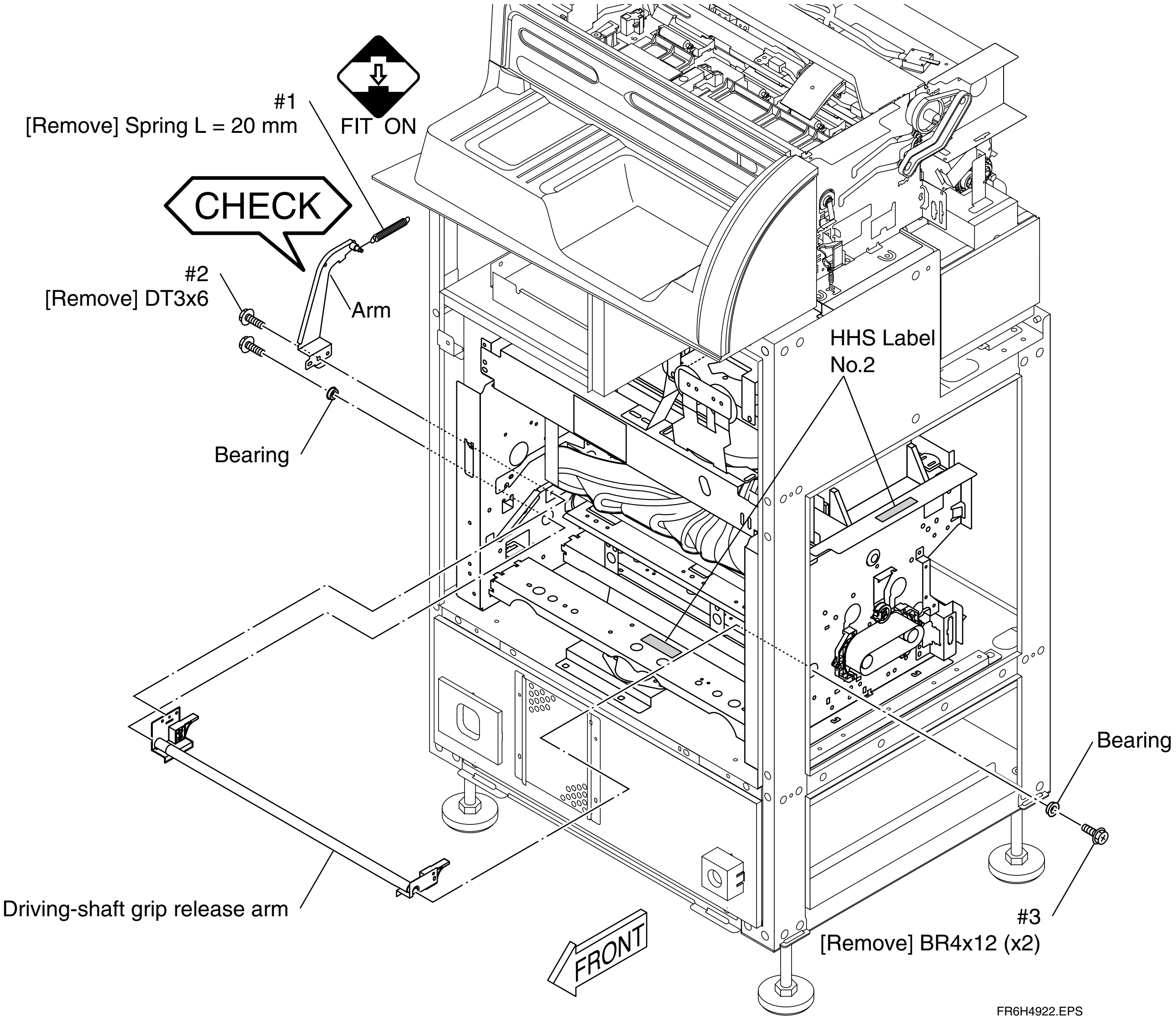
☞ “10.3 Flywheel”

(3) Remove the after-reading conveyor cover.

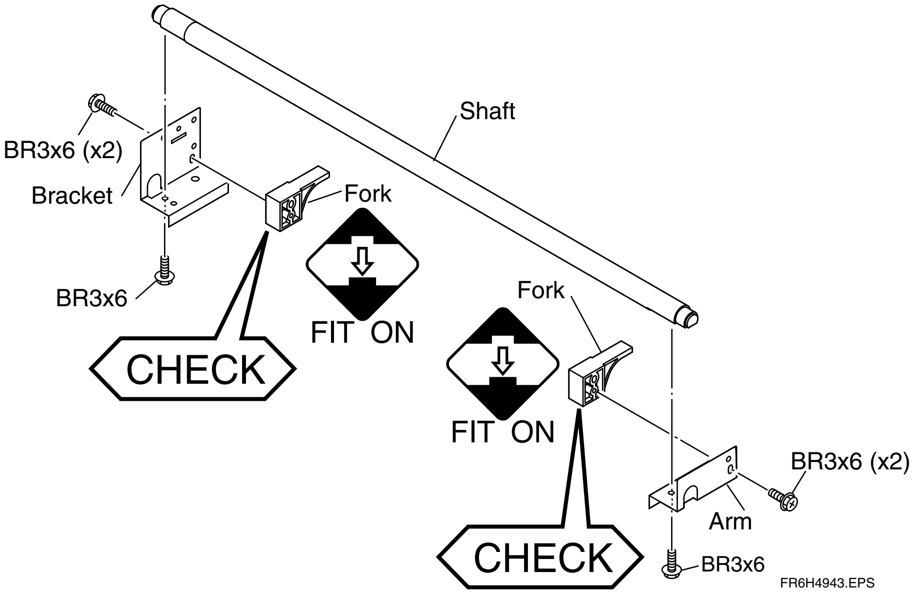

HHS Label
No.2
Spacer
After-reading
conveyor cover
Spacer
#2
[Remove] BR3x6 (x2)
FRONT
#1
[Remove] DT3x8 (x2)

FR6H4921.EPS

(4) Remove the driving-shaft grip release arm.


#1
[Remove] Spring L = 20 mm
FIT ON
CHECK
#2
[Remove] DT3x6
Arm
Bearing
HHS Label
No.2
Bearing
#3
[Remove] BR4x12 (x2)
Driving-shaft grip release arm
FRONT
FR6H4922.EPS

## ■ Exploded View

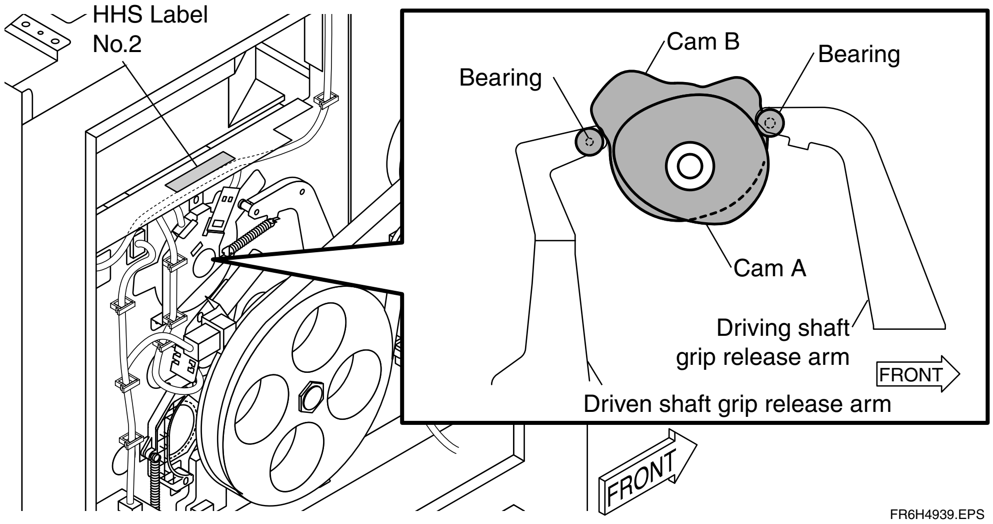

Shaft
BR3x6 (x2)
Bracket
Fork
BR3x6
FIT ON
CHECK
Fork
FIT ON
BR3x6 (x2)
Arm
CHECK
BR3x6
FR6H4943.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

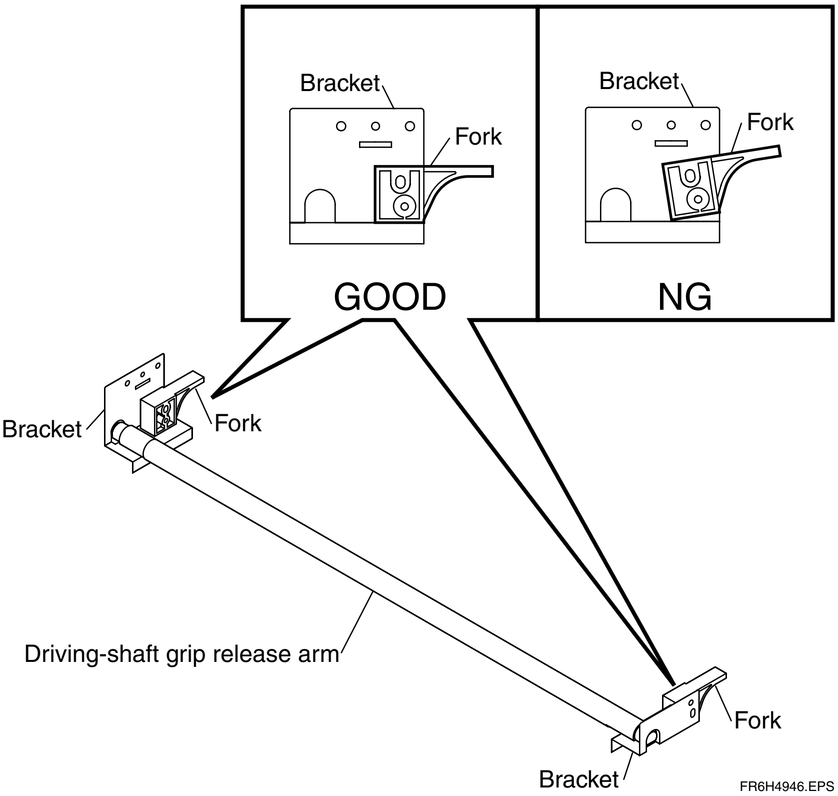
- Make sure that the bearing for the driving-shaft grip release arm is brought into contact with the outer periphery of the cam A.


HHS Label
No.2
Bearing
Cam B
Bearing
Cam A
Driving shaft grip release arm
FRONT
Driven shaft grip release arm
FRONT

FR6H4939.EPS

### ◆ INSTRUCTION ◆

*When the fork for the driving-shaft grip release arm is removed and then reinstalled, make sure that there is no gap between the bracket and fork.*


Bracket
Fork
GOOD
Bracket
Fork
NG
Bracket
Fork
Driving-shaft grip release arm
Fork
Bracket

FR6H4946.EPS

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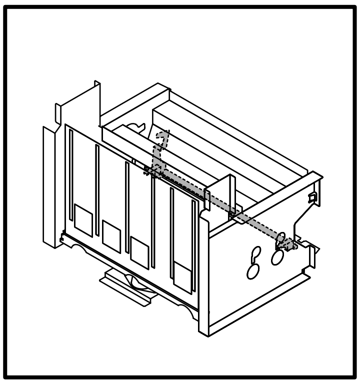
# 10.10 Driven-Shaft Grip Release Arm



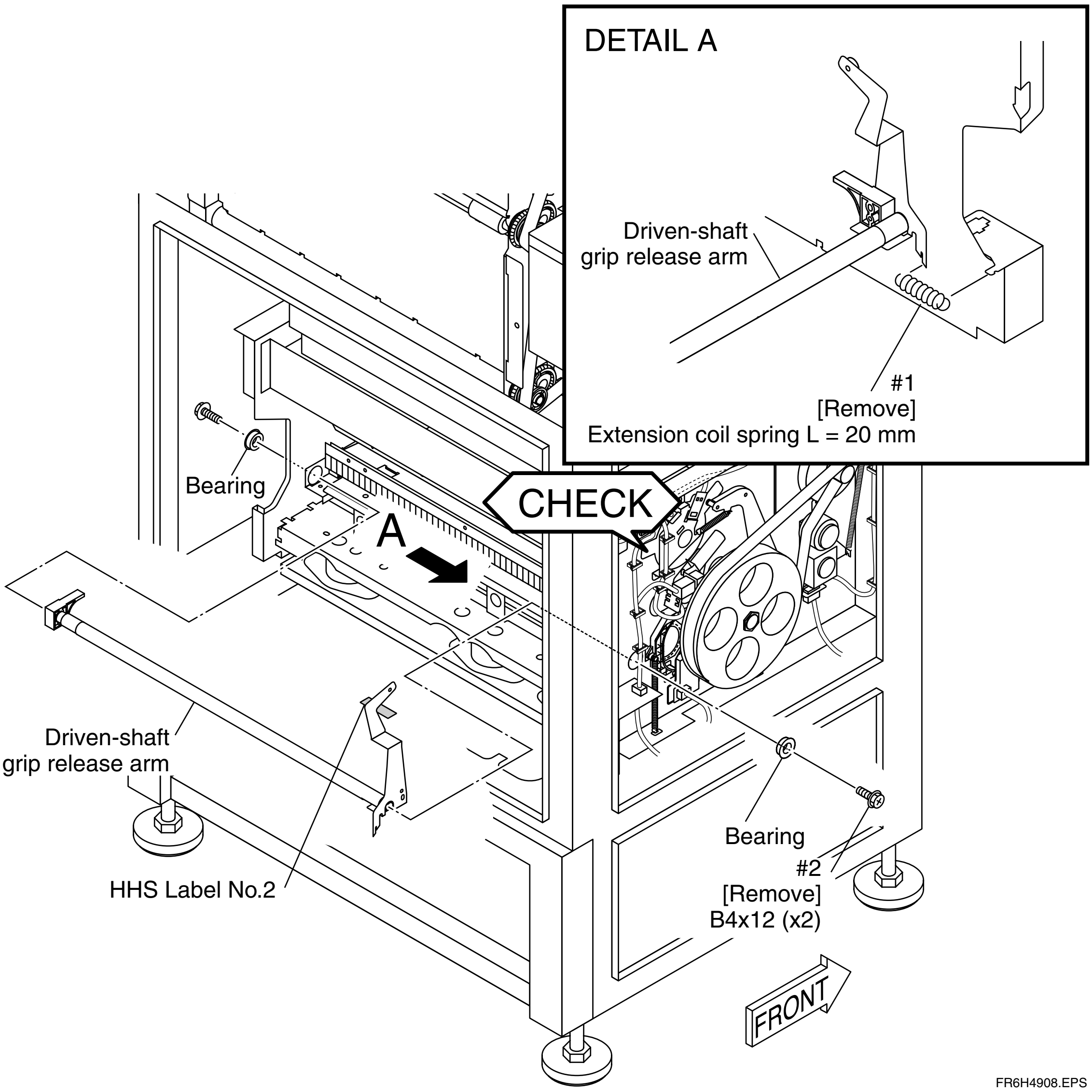
FR6H4955.EPS

## ■ Removal Procedures

(1) Remove the side-positioning conveyor.

☞ “7.1 Side-Positioning Conveyor”

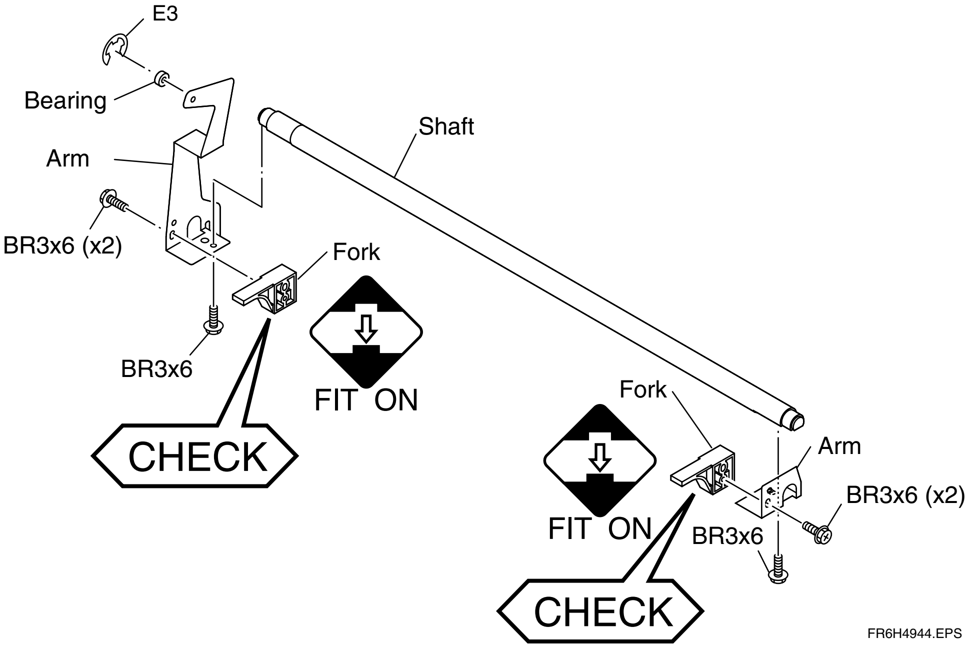
(2) Remove the driven-shaft grip release arm.



DETAIL A
Driven-shaft grip release arm
#1
[Remove]
Extension coil spring L = 20 mm
CHECK
A
Bearing
Driven-shaft grip release arm
HHS Label No.2
Bearing
#2
[Remove]
B4x12 (x2)
FRONT

FR6H4908.EPS

## ■ Exploded View

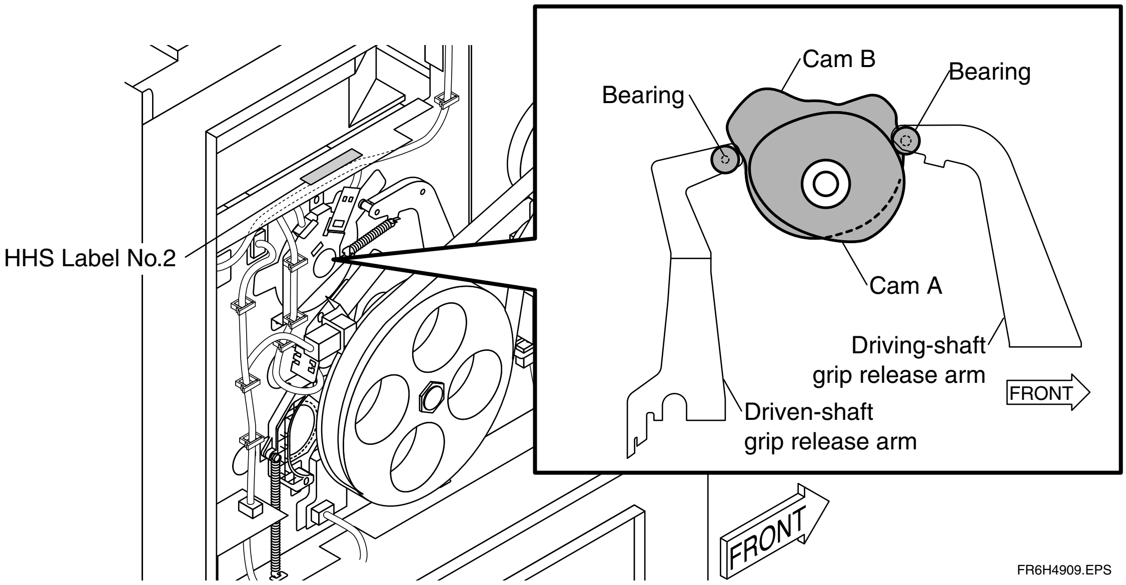

E3
Bearing
Arm
Shaft
BR3x6 (x2)
Fork
BR3x6
FIT ON
CHECK
Fork
Arm
BR3x6 (x2)
FIT ON
BR3x6
CHECK
FR6H4944.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

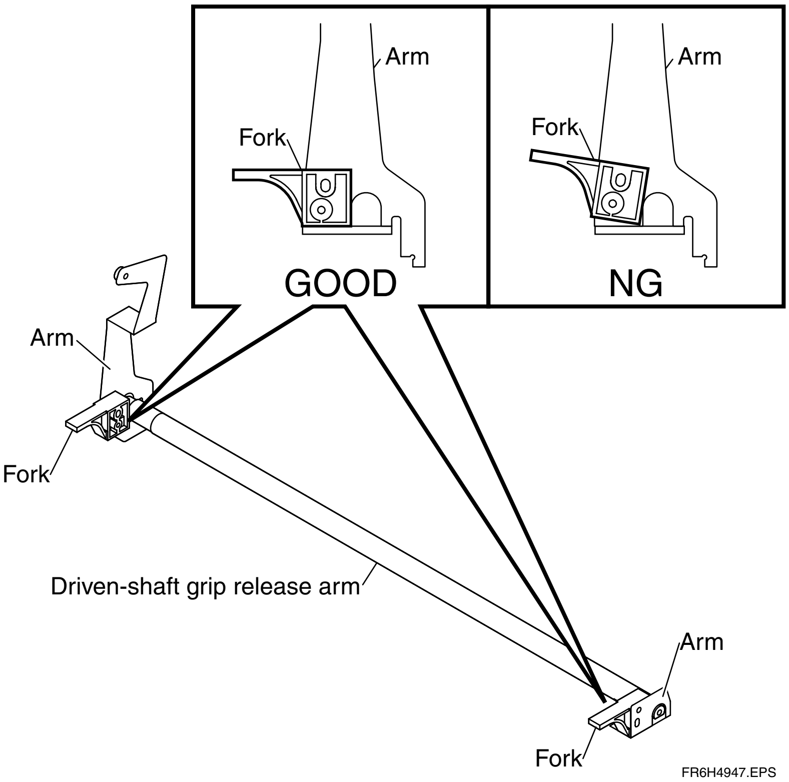
- Make sure that the bearing for the driving-shaft grip release arm is brought into contact with the outer periphery of the cam B.


HHS Label No.2
Cam B
Bearing
Bearing
Cam A
Driving-shaft grip release arm
FRONT
Driven-shaft grip release arm
FRONT
FR6H4909.EPS

## ■ Check/Adjustment Procedures

### ◆ *INSTRUCTION* ◆

*When the fork for the driven-shaft grip release arm is removed and then reinstalled, make sure that there is no gap between the arm and fork.*

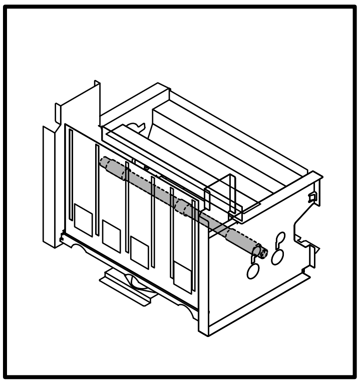

Arm
Fork
GOOD
Arm
Fork
NG
Arm
Fork
Driven-shaft grip release arm
Arm
Fork
FR6H4947.EPS

*BLANK PAGE*

*BLANK PAGE*

*BLANK PAGE*

## 10.11 Driving-Shaft Grip Roller (Upper)



FR6H4961.EPS

### ■ Removal Procedures

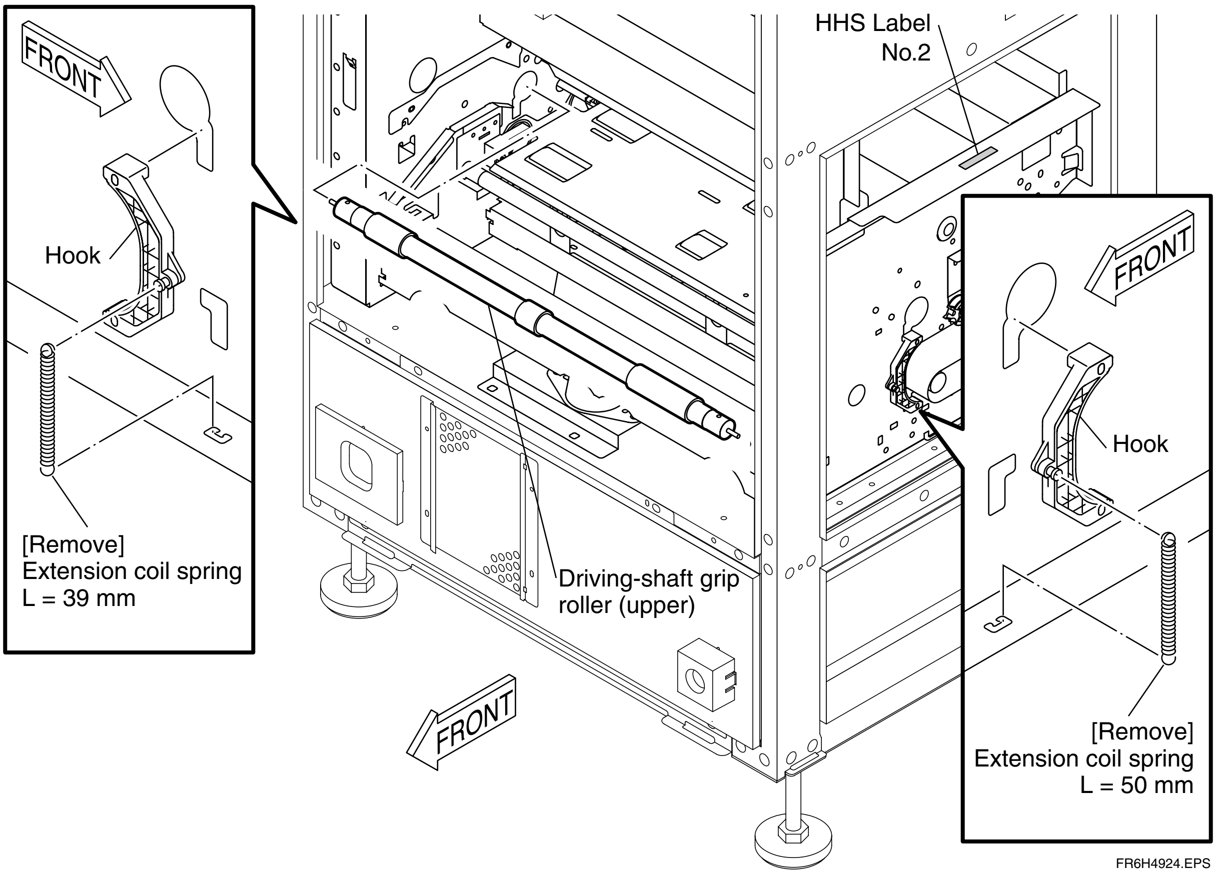
(1) Remove the light-collecting unit.

☞ "8.1 Light-Collecting Unit"

(2) Remove the flywheel.

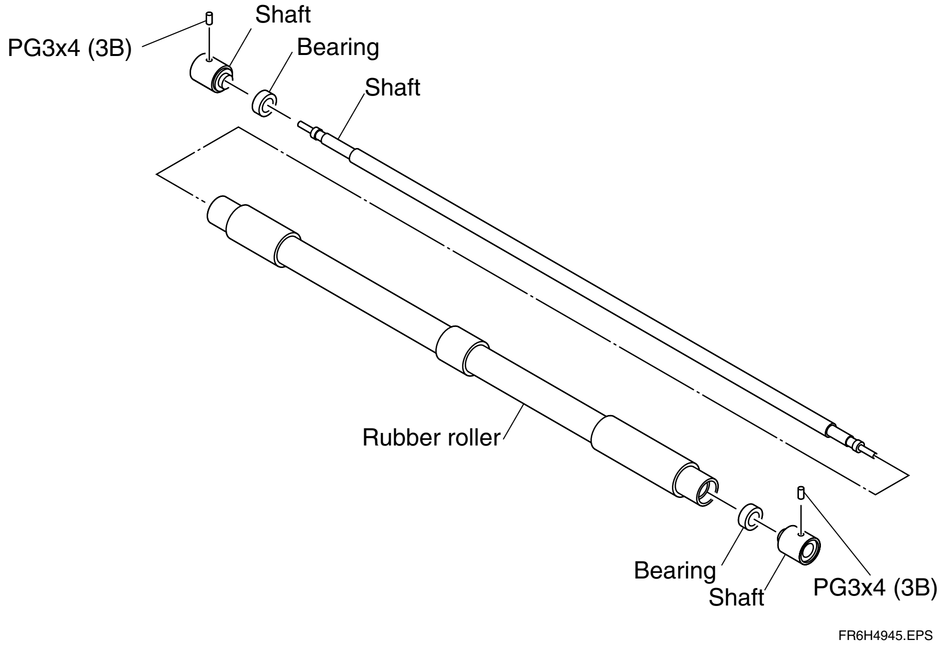
☞ "10.3 Flywheel"

(3) Remove the driving-shaft grip roller (upper).


FRONT
Hook
[Remove]
Extension coil spring
L = 39 mm
HHS Label
No.2
Driving-shaft grip
roller (upper)
FRONT
FRONT
Hook
[Remove]
Extension coil spring
L = 50 mm

FR6H4924.EPS

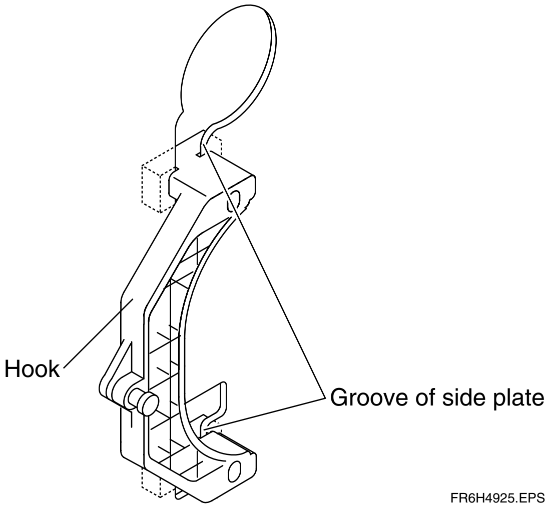
## ■ Exploded View


Shaft
PG3x4 (3B)
Bearing
Shaft
Rubber roller
Bearing
Shaft
PG3x4 (3B)
FR6H4945.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTIONS* ◆

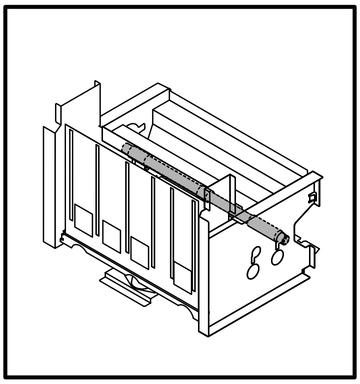
- *The extension coil springs differ in size depending on where they are attached. Use care not to confuse their locations.*
- *To install the hook, snap it securely into the groove of the side plate.*


Hook
Groove of side plate
FR6H4925.EPS

---

For reinstallation, reverse the removal steps.

## 10.12 Driven-Shaft Grip Roller (Upper)



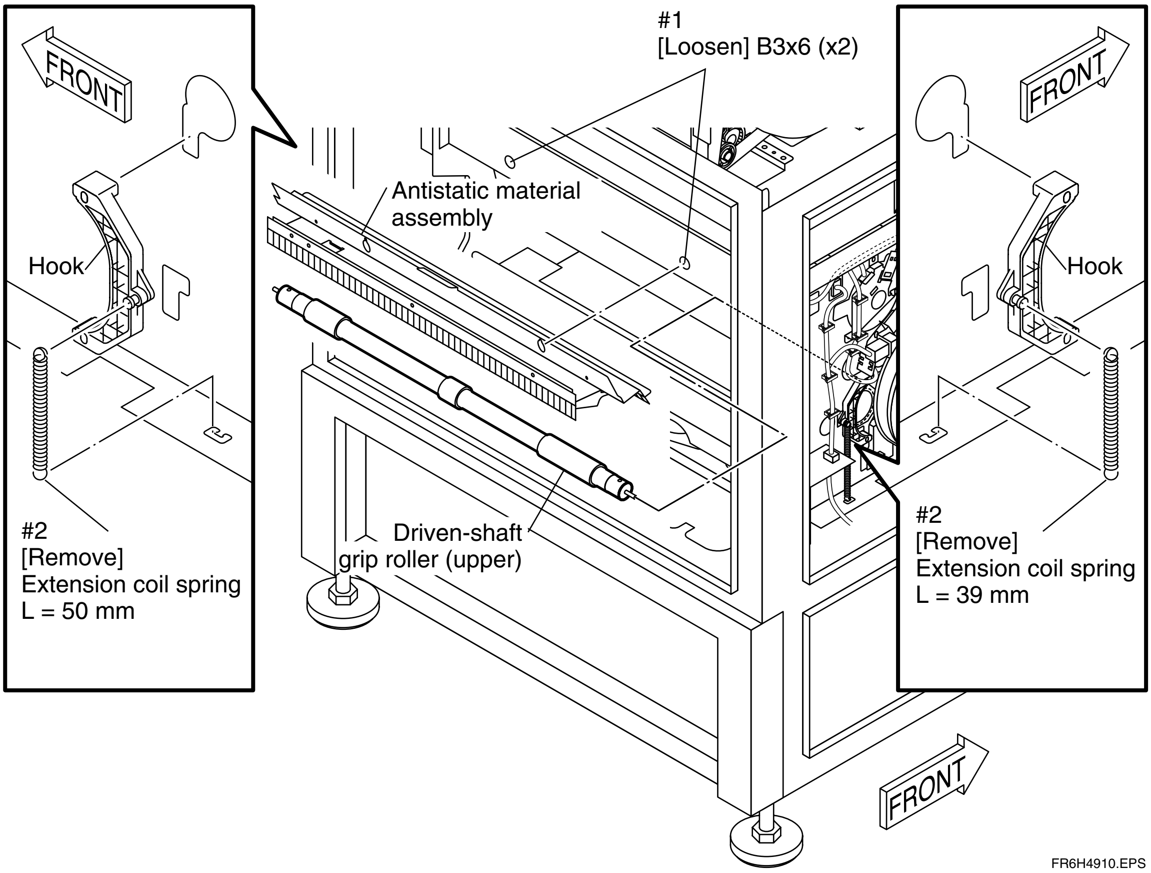
FR6H4956.EPS

### ■ Removal Procedures

(1) Remove the side-positioning conveyor.

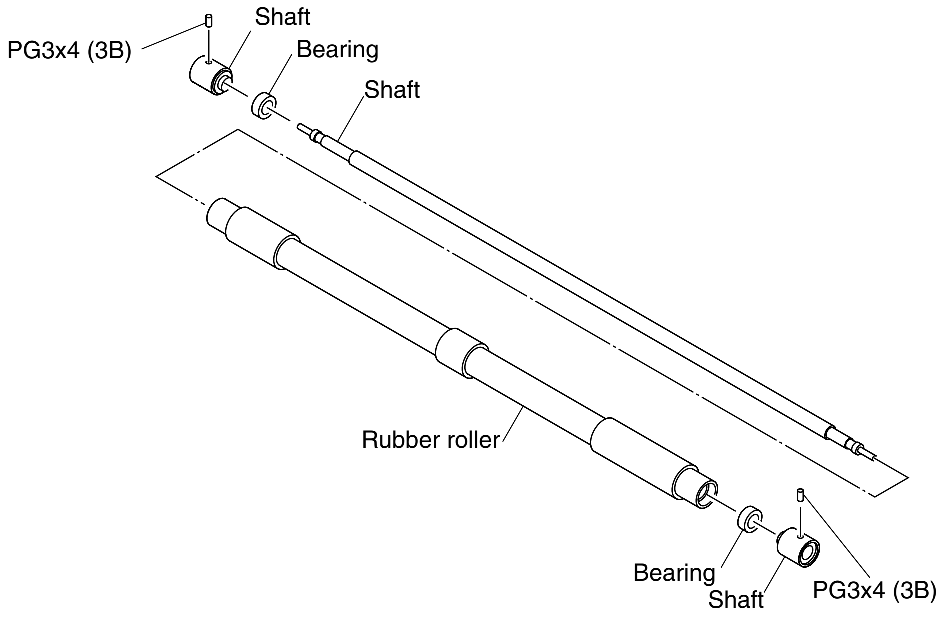
☞ “7.1 Side-Positioning Conveyor”

(2) Remove the driven-shaft grip roller (upper).


FRONT
#1
[Loosen] B3x6 (x2)
FRONT
Antistatic material assembly
Hook
Hook
#2
[Remove]
Extension coil spring
L = 50 mm
Driven-shaft grip roller (upper)
#2
[Remove]
Extension coil spring
L = 39 mm
FRONT

FR6H4910.EPS

## ■ Exploded View

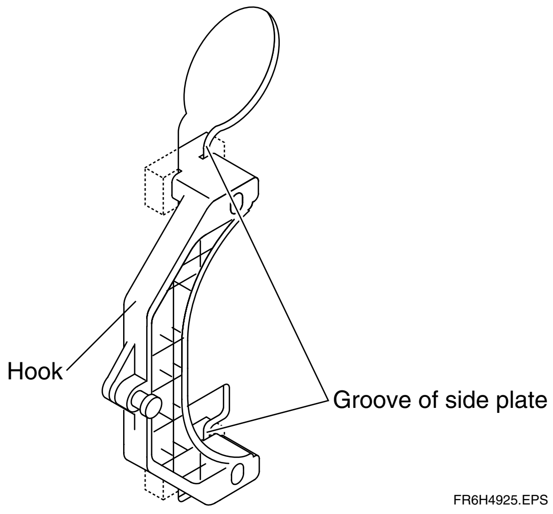

PG3x4 (3B)
Shaft
Bearing
Shaft
Rubber roller
Bearing
Shaft
PG3x4 (3B)

FR6H4945.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTIONS* ◆

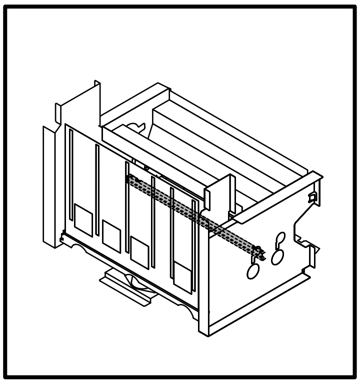
- *The extension coil springs differ in size depending on where they are attached.  Use care not to confuse their locations.*
- *To install the hook, snap it securely into the groove of the side plate.*


Hook
Groove of side plate

FR6H4925.EPS

For reinstallation, reverse the removal steps.

# 10.13 Light-Collecting Mirror



FR6H4957.EPS

### ◆ *INSTRUCTION* ◆

*When handling the light-collecting mirror, pay attention to the following points.*

- *Wear gloves.*
  *However, never touch the reflection surface of the light-collecting mirror even when you are wearing the gloves.*
- *Wear a mask so that saliva does not come into contact with the light-collecting mirror.*

## ■ Removal Procedures

(1) Remove the flywheel.

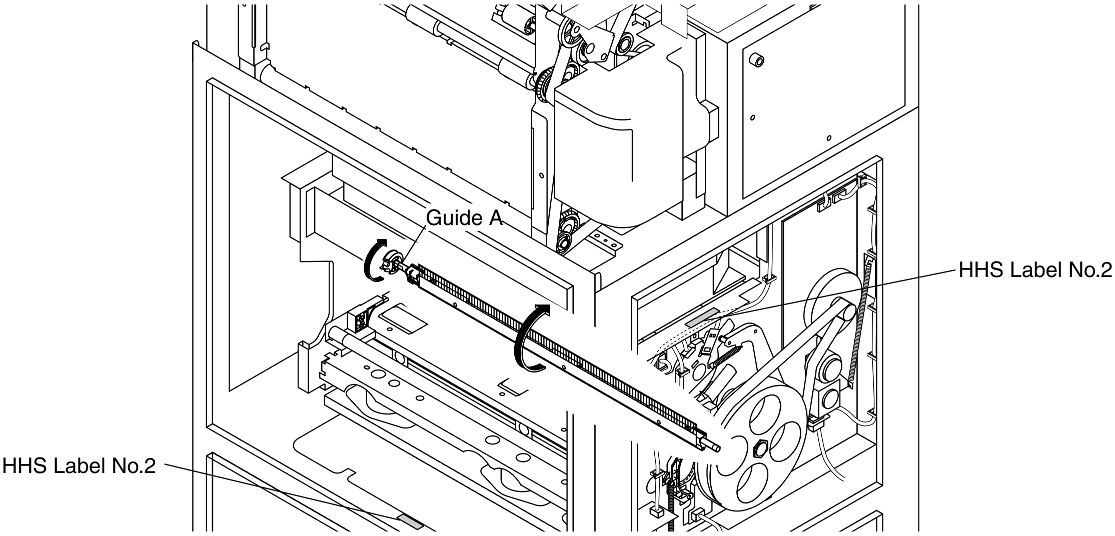
☞ “10.3 Flywheel”

(2) Remove the driven-shaft grip roller (upper).

☞ “10.12 Driven-Shaft Grip Roller (Upper)”

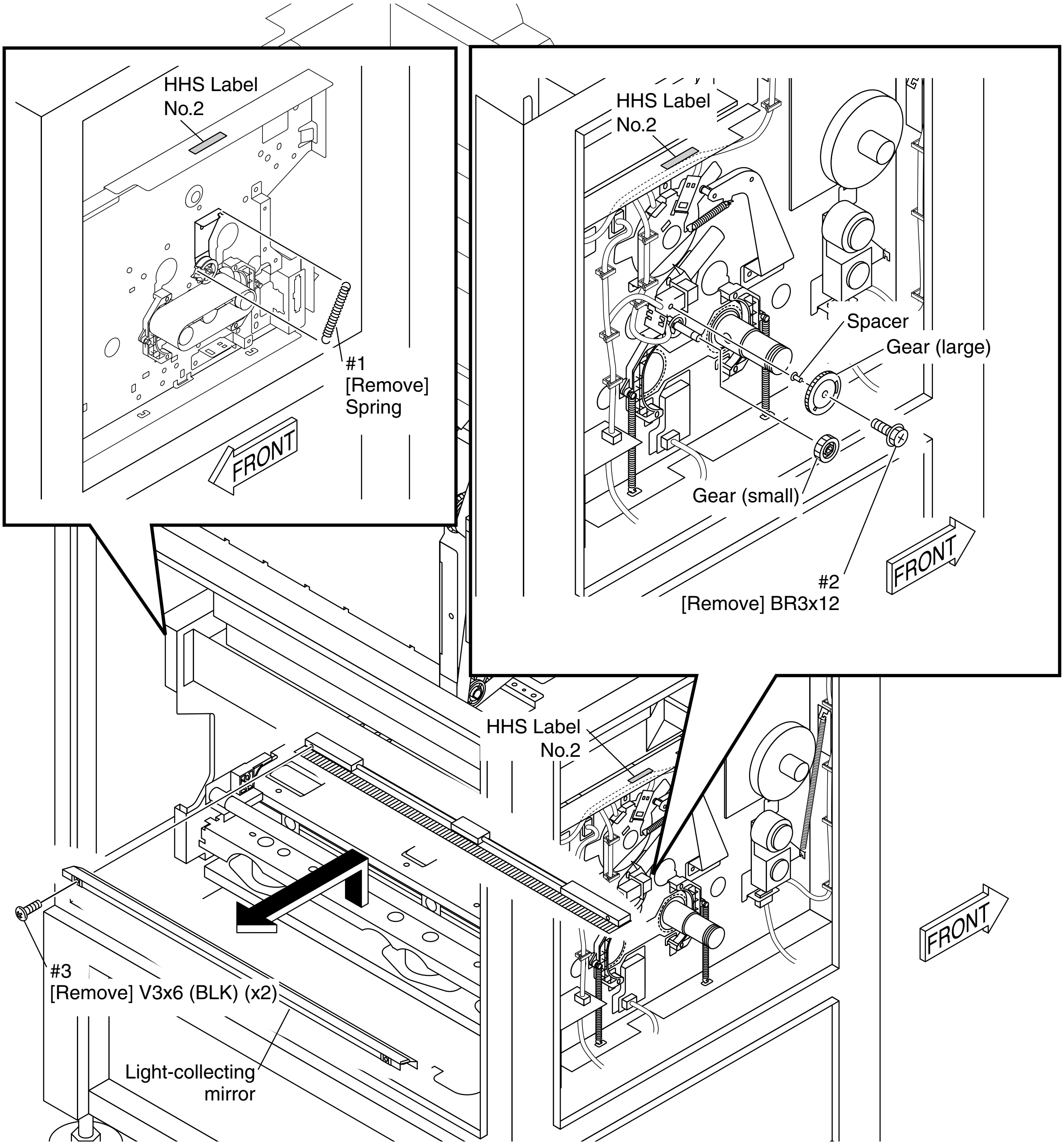
### ◇ *REFERENCE* ◇

*When removing the light-collecting mirror, rotate the guide A in the direction of the arrow as illustrated below to facilitate access to the screw that retains the light-collecting mirror.*



FR6H4912.EPS

(3) Remove the light-collecting mirror.

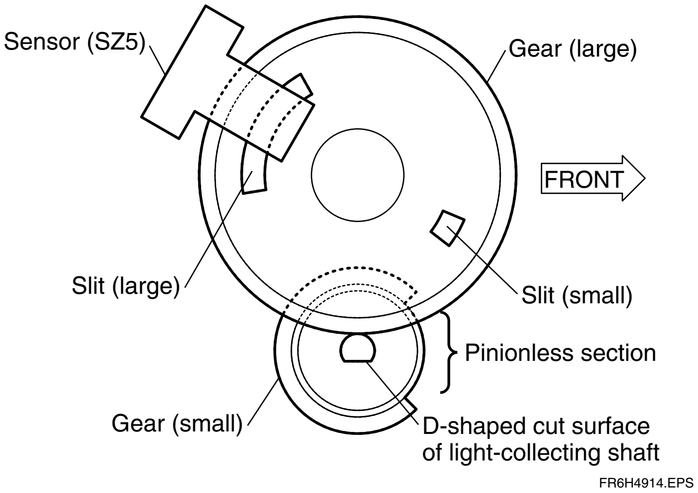

HHS Label
No.2
#1
[Remove]
Spring
FRONT
HHS Label
No.2
Spacer
Gear (large)
Gear (small)
#2
[Remove] BR3x12
FRONT
HHS Label
No.2
FRONT
#3
[Remove] V3x6 (BLK) (x2)
Light-collecting
mirror

FR6H4913.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*Refer to the illustration below when mounting the gear (large) and gear (small).*

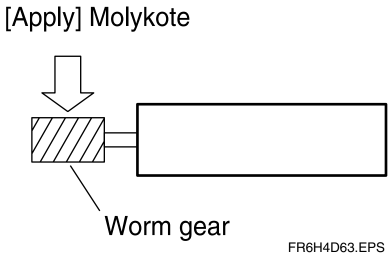

Sensor (SZ5)
Gear (large)
FRONT
Slit (large)
Slit (small)
Pinionless section
Gear (small)
D-shaped cut surface of light-collecting shaft
FR6H4914.EPS

(1) Apply Molykote to the worm gear.

When mounting the MZ3, use Molykote as indicated below.

- Made by Dow Corning
- Type

| | |
|---|---|
| JPN/USA | Molykote (EM30L GREASE) |
| Europe | Molykote (PG30L GREASE) |


[Apply] Molykote
Worm gear
FR6H4D63.EPS

### ◆ *NOTE* ◆

*When mounting the MZ3, apply a grain size of Molykote to the worm gear. Otherwise, an error (13395) might occur.*

(2) For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

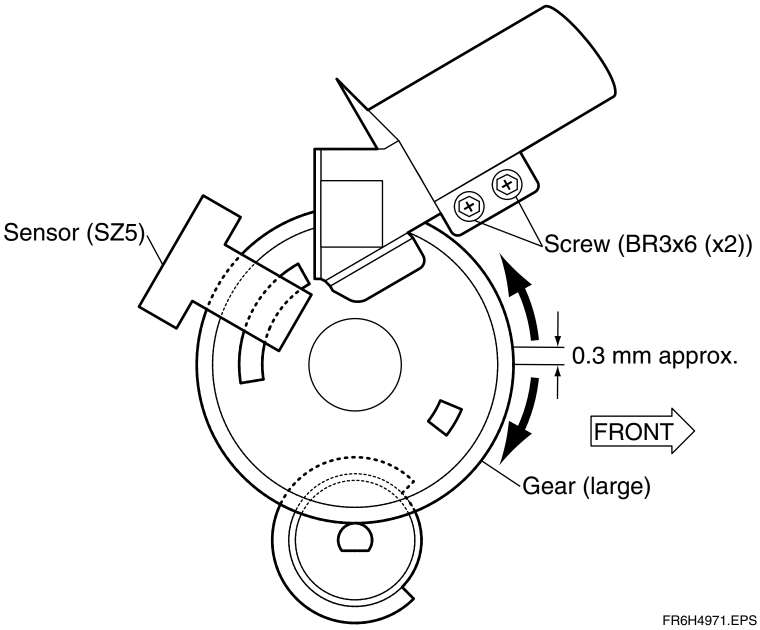
(1) Verify that the D-shaped cut surface of the light-collecting shaft and the gear (large) and gear (small) are mounted in their correct orientation.

(2) Check the engagement between the gear (large) and the worm gear of the motor (MZ3).

GOOD: There should be some backlash (about 0.3 mm).

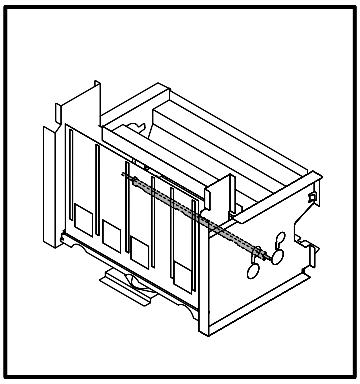
NG: There is no backlash (the gear (large) and the worm gear of the motor (MZ3) move).

If the engagement between the gears is inappropriate, loosen the screws (BR3x6 (x2)) that retain the motor (MZ3). and adjust the engagement as appropriate.



(3) Power ON the CL/RU, and verify that a dust removal operation failure or dust removal function lock error does not occur.

# 10.14 Light-Collecting Shaft



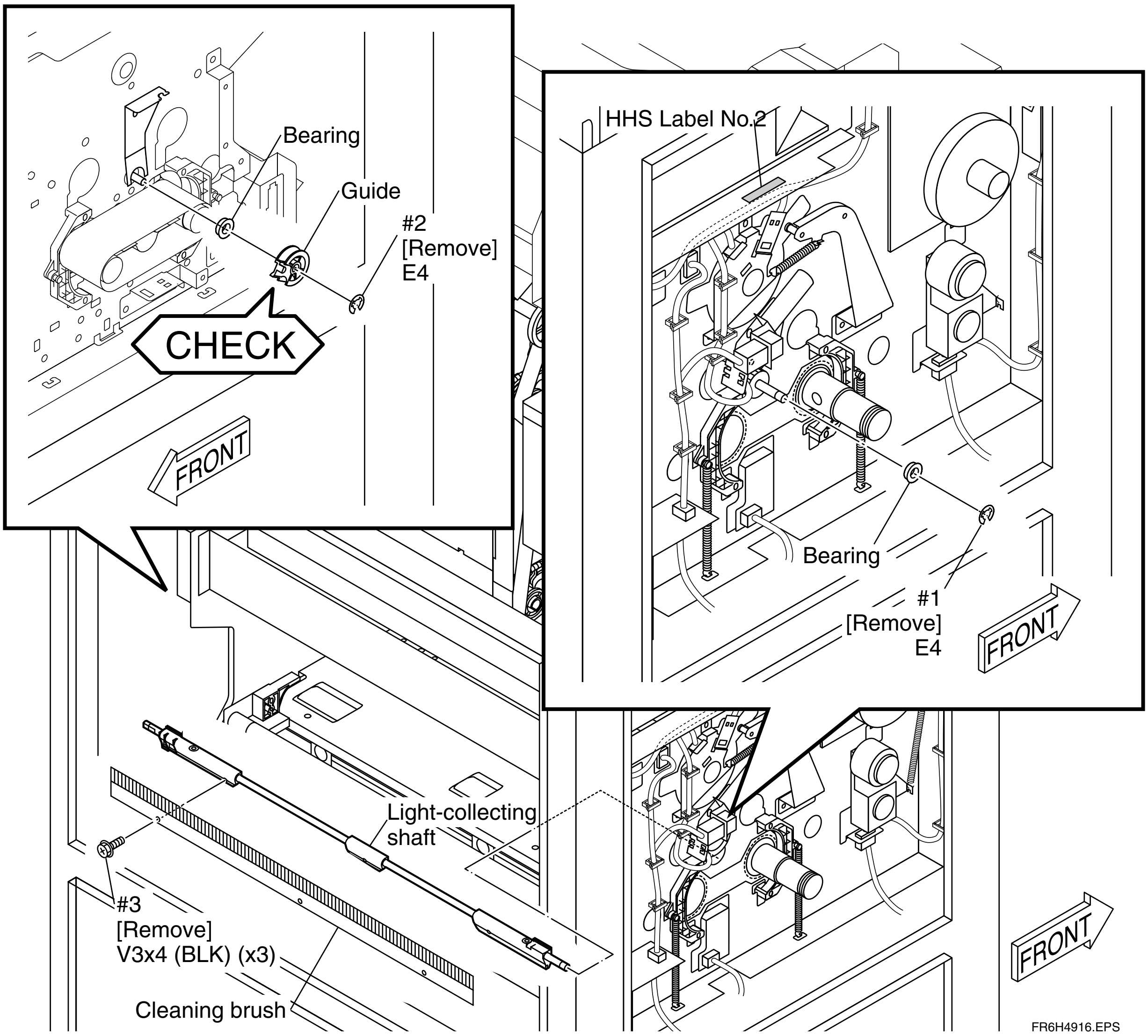
FR6H4958.EPS

## ■ Removal Procedures

(1) Remove the light-collecting mirror.

☞ “10.13 Light-Collecting Mirror”

(2) Remove the light-collecting shaft.

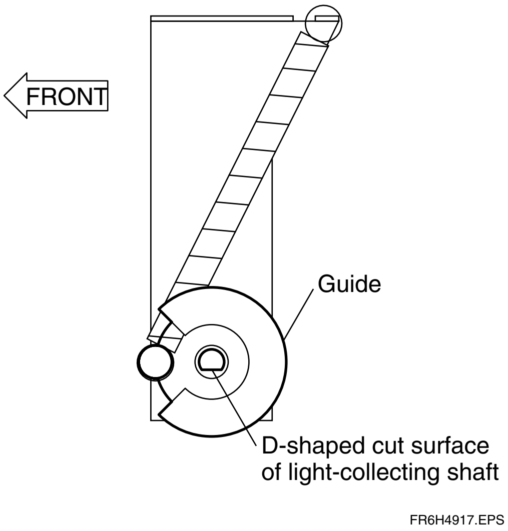

Bearing
Guide
#2
[Remove]
E4
CHECK
FRONT
HHS Label No.2
Bearing
#1
[Remove]
E4
FRONT
Light-collecting shaft
#3
[Remove]
V3x4 (BLK) (x3)
Cleaning brush
FRONT

FR6H4916.EPS

## ■ Reinstallation Procedures

**◆ *INSTRUCTION* ◆**

*Install the guide in the orientation illustrated below.*


FRONT
Guide
D-shaped cut surface
of light-collecting shaft
FR6H4917.EPS

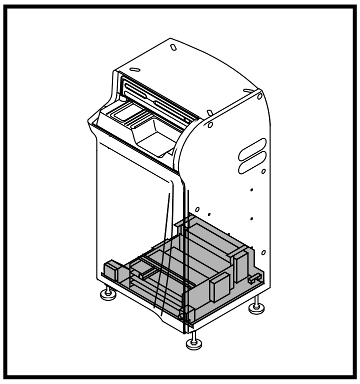
For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the guide is mounted in its correct orientation.

# 11. Removing and Reinstalling the Controller

## 11.1 Controller



FR6H4A56.EPS

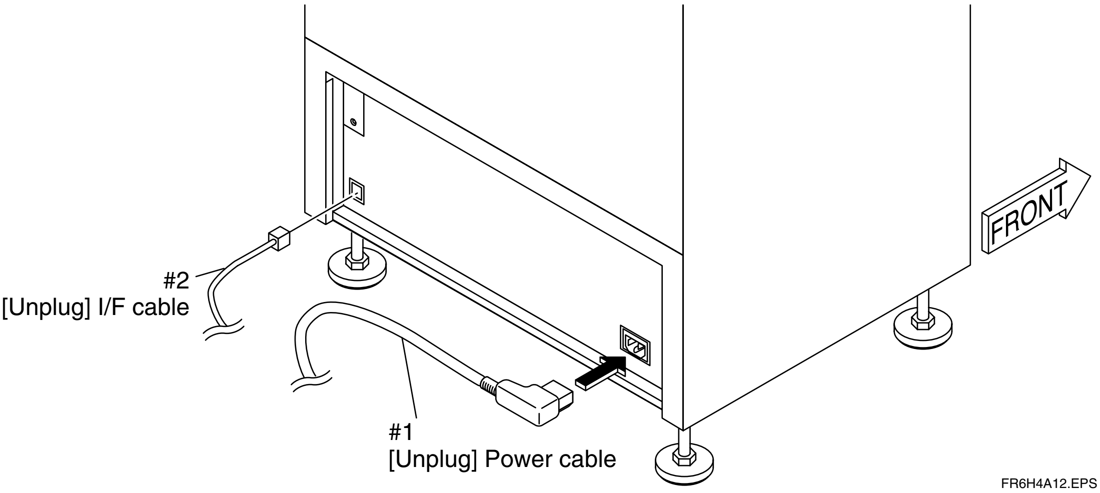
**WARNING**

*To avoid electric shock hazards, turn OFF the breaker of the machine and unplug the power cable from the outlet before performing the procedures.*

### ■ Removal Procedures

(1) Unplug the cables.

- Power cable
- I/F cable



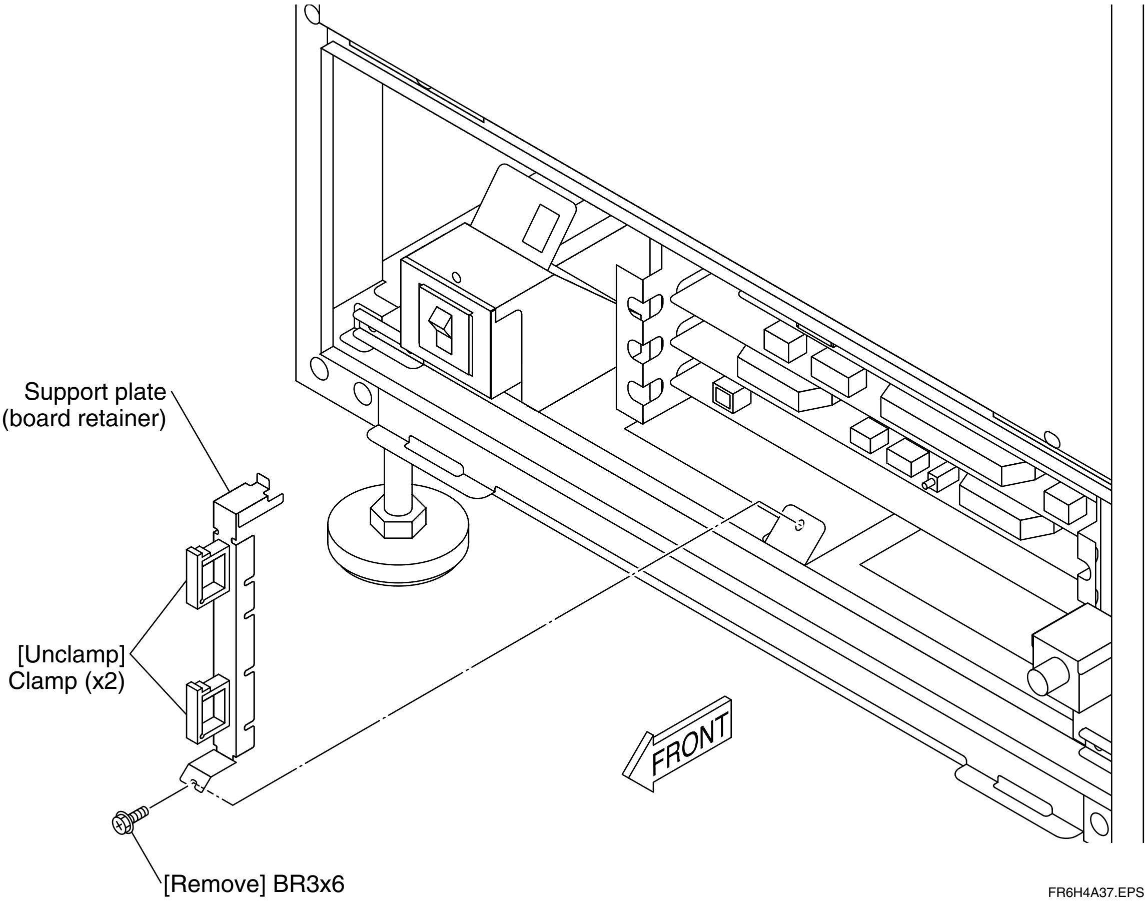
FR6H4A12.EPS

(2) Remove the covers.

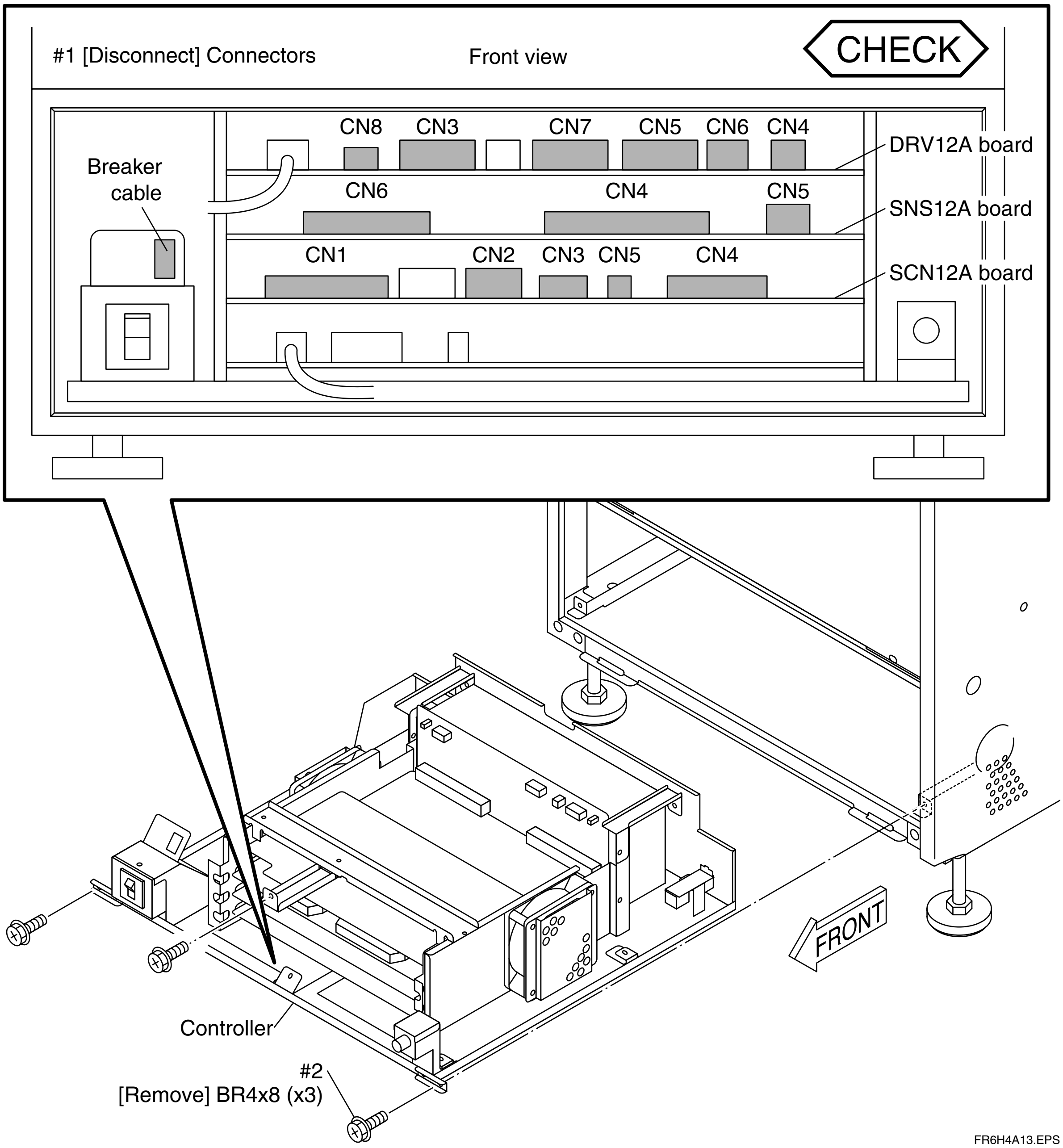
- Front cover
- Lower light protect plate

☞ “3.1 Removing and Reinstalling the Covers”

(3) Remove the support plate (board retainer).


Support plate
(board retainer)
[Unclamp]
Clamp (x2)
[Remove] BR3x6
FRONT
FR6H4A37.EPS

(4) Remove the controller.


#1 [Disconnect] Connectors
Front view
CHECK
Breaker cable
CN8
CN3
CN7
CN5
CN6
CN4
DRV12A board
CN6
CN4
CN5
SNS12A board
CN1
CN2
CN3
CN5
CN4
SCN12A board
FRONT
Controller
#2
[Remove] BR4x8 (x3)
FR6H4A13.EPS

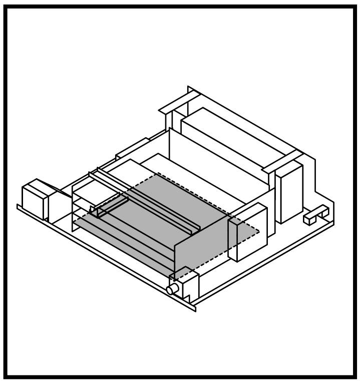
## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## ■Check/Adjustment Procedures

- Make sure that the connectors are connected to their correct locations.

# 11.2 Replacing the CPU12A Board



FR6H4A51.EPS

## *CAUTIONS*

- *When the manganese lithium battery is completely drained, replace the board as a whole.*
- *Return the old board replaced to the Service Parts Center (manufacturer's factory).*
- *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

- *When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

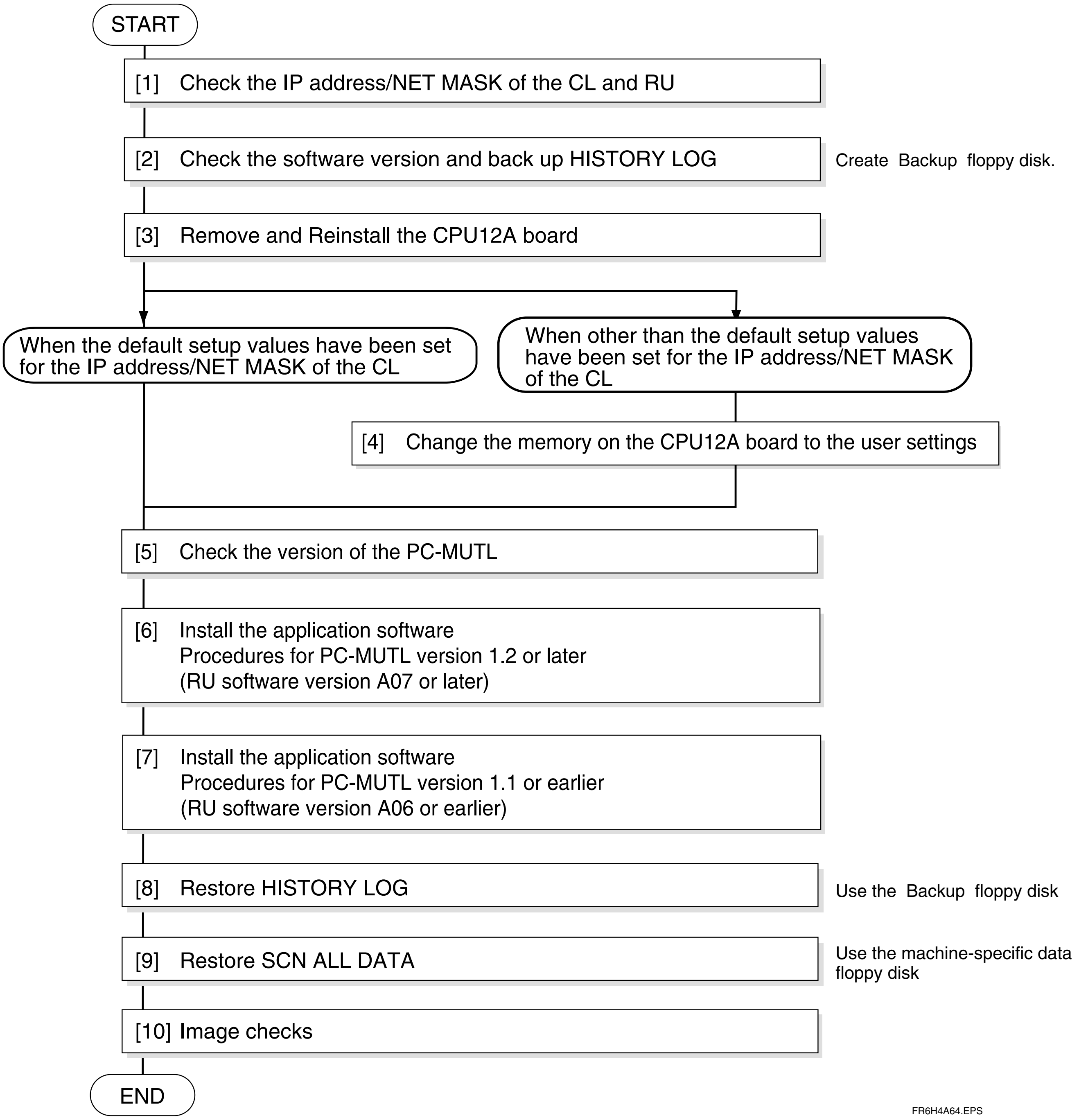
- *When replacing the CPU12A board, do not power OFF the CL/RU unless otherwise instructed in this manual.*

- *Make sure that devices that are set as shown below are not connected over the same network:*

  *"Device where 'ru0' is used as the RU host name"*
  *"Device where the IP address is used by its default setting (172.16.1.10)"*

  *If any device of such specifications is connected over the same network, disconnect that device from the same network by powering it OFF or unplugging its I/F cable.*
  *Unless such a device is disconnected, the application and configuration data of that device will be automatically updated as well when the application of the RU is updated.*

A replacement flow for the CPU12A board is presented below.


START
[1] Check the IP address/NET MASK of the CL and RU
[2] Check the software version and back up HISTORY LOG
Create Backup floppy disk.
[3] Remove and Reinstall the CPU12A board
When the default setup values have been set for the IP address/NET MASK of the CL
When other than the default setup values have been set for the IP address/NET MASK of the CL
[4] Change the memory on the CPU12A board to the user settings
[5] Check the version of the PC-MUTL
[6] Install the application software
Procedures for PC-MUTL version 1.2 or later
(RU software version A07 or later)
[7] Install the application software
Procedures for PC-MUTL version 1.1 or earlier
(RU software version A06 or earlier)
[8] Restore HISTORY LOG
Use the Backup floppy disk
[9] Restore SCN ALL DATA
Use the machine-specific data floppy disk
[10] Image checks
END
FR6H4A64.EPS

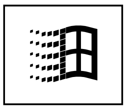
# [1] Check the IP address/NET MASK of the CL and RU

**◆ *NOTE* ◆**

*When the CPU12A board is replaced, the IP address of a new CPU12A board is at its default setting, so that it cannot be connected to the CL. Here, check to see whether the user is using the default setting. If the default setting is not used, it is necessary to take note of the user's setting.*

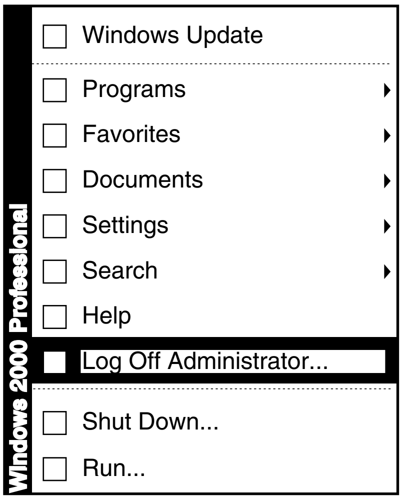
(1) Exit the CL software.

(2) Press the [Windows] key to open the Start menu of Windows.

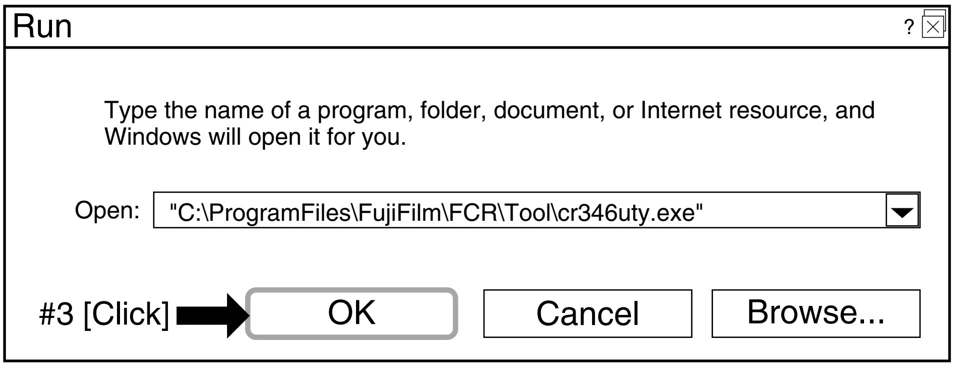


Press.

(3) Select [Run...] from the Start menu of Windows, and type ["C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"] to open the MAINTENANCE UTILITY, and display the EDIT CONFIGURATION window.


Windows 2000 Professional
Windows Update
Programs
Favorites
Documents
Settings
Search
Help
Log Off Administrator...
Shut Down...
Run...

#1 [Click]


Run
?
OK
Cancel
Browse...

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

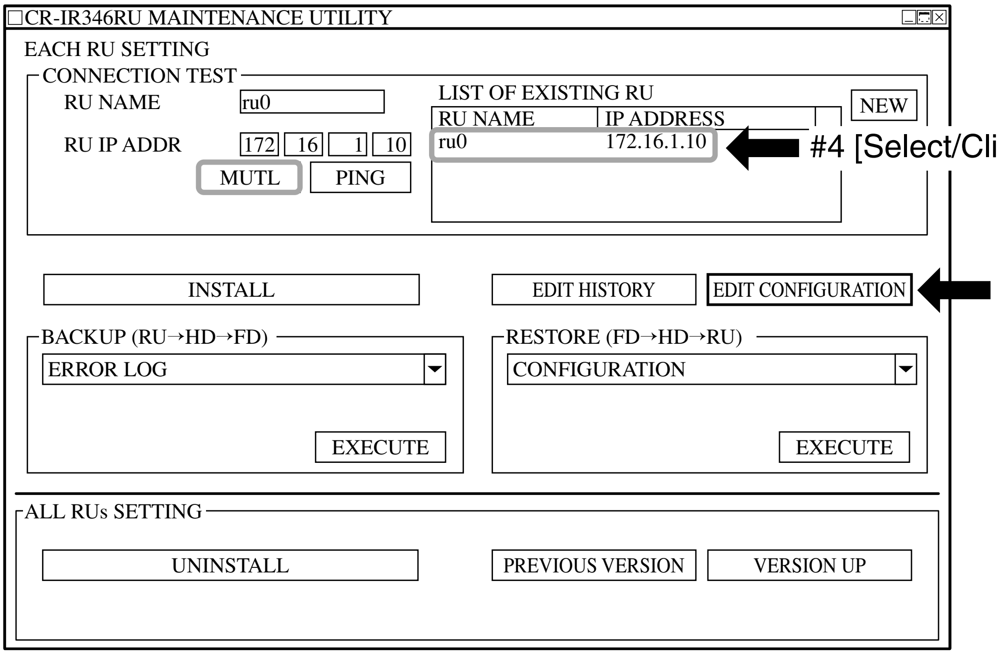
Open: "C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"

#2 [Type]

#3 [Click]

FR6H4A65.EPS

RU SERVICE UTILITY window


☐CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU→HD→FD)
RESTORE (FD→HD→RU)
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru0

RU IP ADDR: 172 16 1 10

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

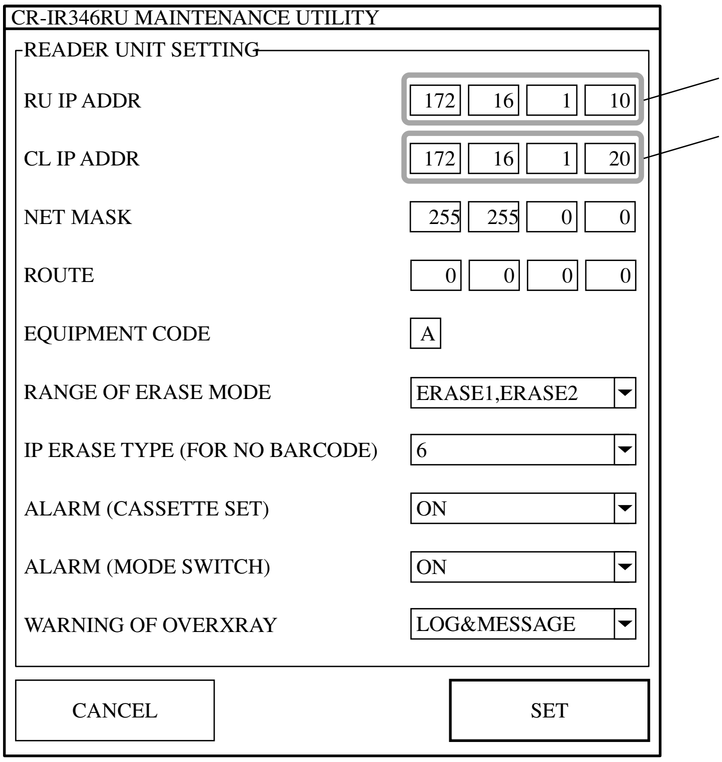
BACKUP (RU→HD→FD): ERROR LOG

RESTORE (FD→HD→RU): CONFIGURATION

#4 [Select/Click]

#5 [Select/Click]

EDIT CONFIGURATION window


CR-IR346RU MAINTENANCE UTILITY
READER UNIT SETTING
CANCEL
SET

| | |
|---|---|
| RU IP ADDR | 172 16 1 10 |
| CL IP ADDR | 172 16 1 20 |
| NET MASK | 255 255 0 0 |
| ROUTE | 0 0 0 0 |
| EQUIPMENT CODE | A |
| RANGE OF ERASE MODE | ERASE1,ERASE2 |
| IP ERASE TYPE (FOR NO BARCODE) | 6 |
| ALARM (CASSETTE SET) | ON |
| ALARM (MODE SWITCH) | ON |
| WARNING OF OVERXRAY | LOG&MESSAGE |

IP address of RU (default setup value)

IP address of CL (default setup value)

FR6H4A66.EPS

(4) Verify the IP address/NET MASK of the RU and CL.

(5) If the default setting is not used, take note of the values for “RU IP ADDR”, “CL IP ADDR”, and “NET MASK”.

## [2] Check the software version and back up HISTORY LOG

### ◆ *INSTRUCTIONS* ◆

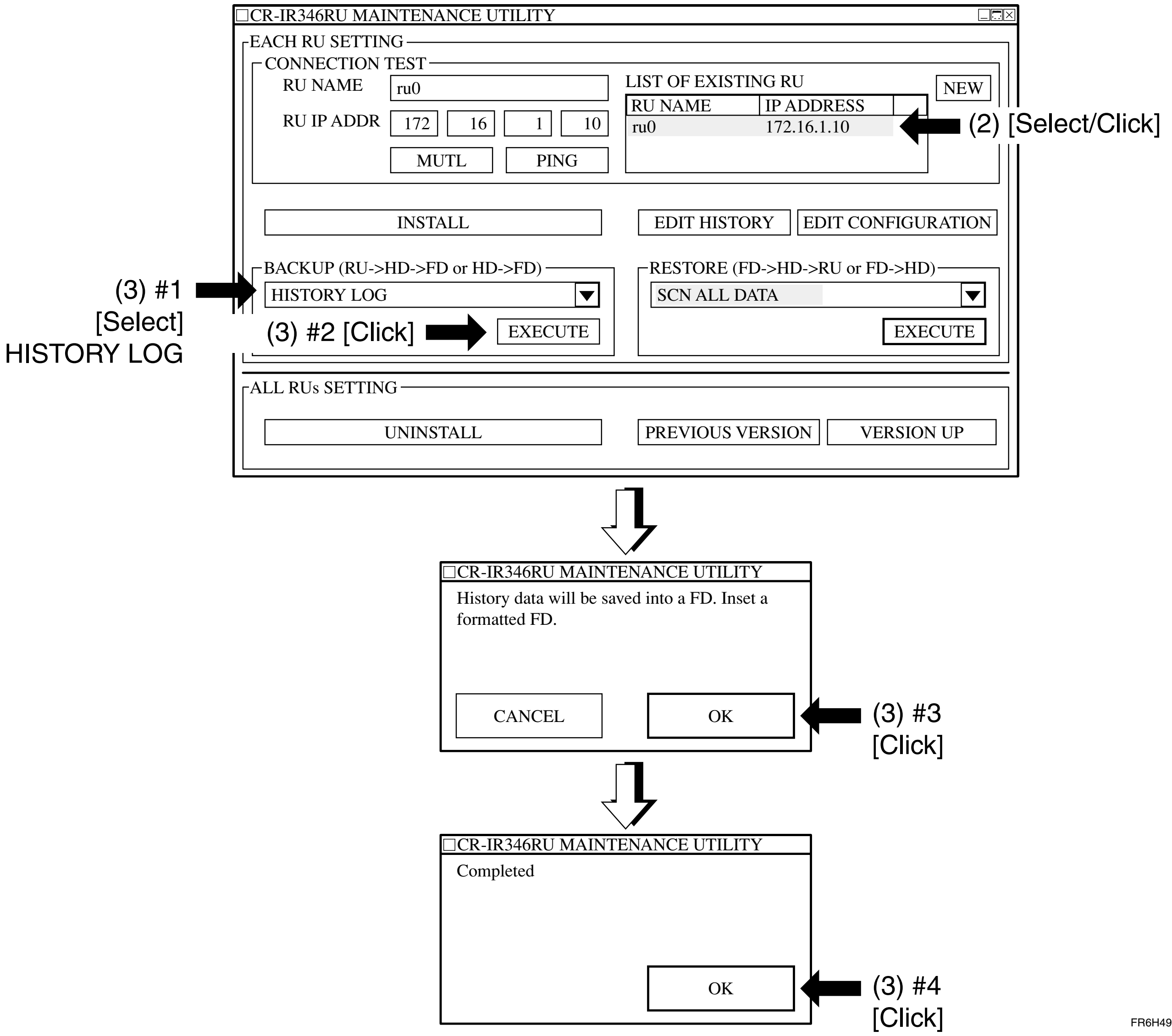
- *If the software version of the RU is A02 or earlier, update the software version to A03 or later before replacing the CPU12A board.*
  *☞ "13. Version Updating Procedures"*
- *Back up HISTORY DATA on the CPU12A board. Execute the backup in accordance with the instructions presented below.*

(1) Insert a blank floppy disk into the FD drive.

(2) Open the CR-IR346RU MAINTENANCE UTILITY window and select a relevant RU from "LIST OF EXISTING RU".

(3) Back up HISTORY LOG.

MAINTENANCE UTILITY window



CR-IR346RU MAINTENANCE UTILITY

RU NAME: ru0
RU IP ADDR: 172 16 1 10

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU->HD->FD or HD->FD): HISTORY LOG
RESTORE (FD->HD->RU or FD->HD): SCN ALL DATA

CR-IR346RU MAINTENANCE UTILITY
History data will be saved into a FD. Inset a formatted FD.

CR-IR346RU MAINTENANCE UTILITY
Completed

EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
CANCEL
OK
OK

(2) [Select/Click]

(3) #1 [Select] HISTORY LOG

(3) #2 [Click]

(3) #3 [Click]

(3) #4 [Click]

FR6H4972.EPS

(4) Power OFF the RU.

# [3] Remove and Reinstall the CPU12A board

## ■ Removal Procedures

(1) Remove the covers.

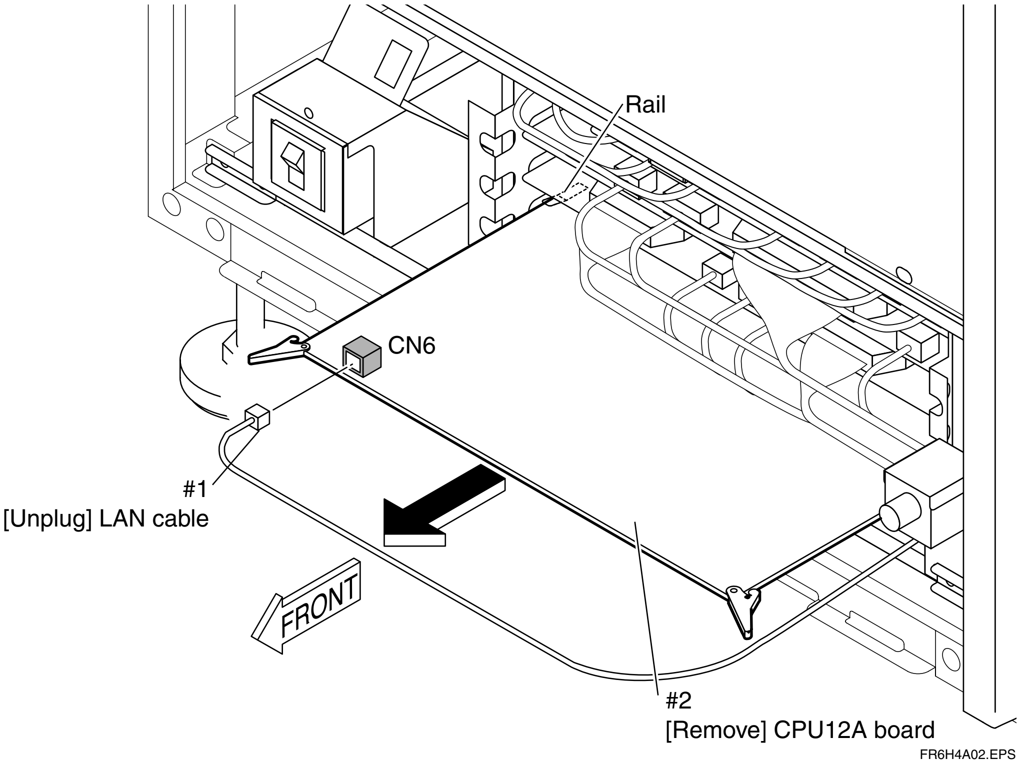
- Front cover
- Lower light protect plate

☞ “3.1 Removing and Reinstalling the Covers”

(2) Remove the support plate (board retainer).

☞ “11.1 Controller”

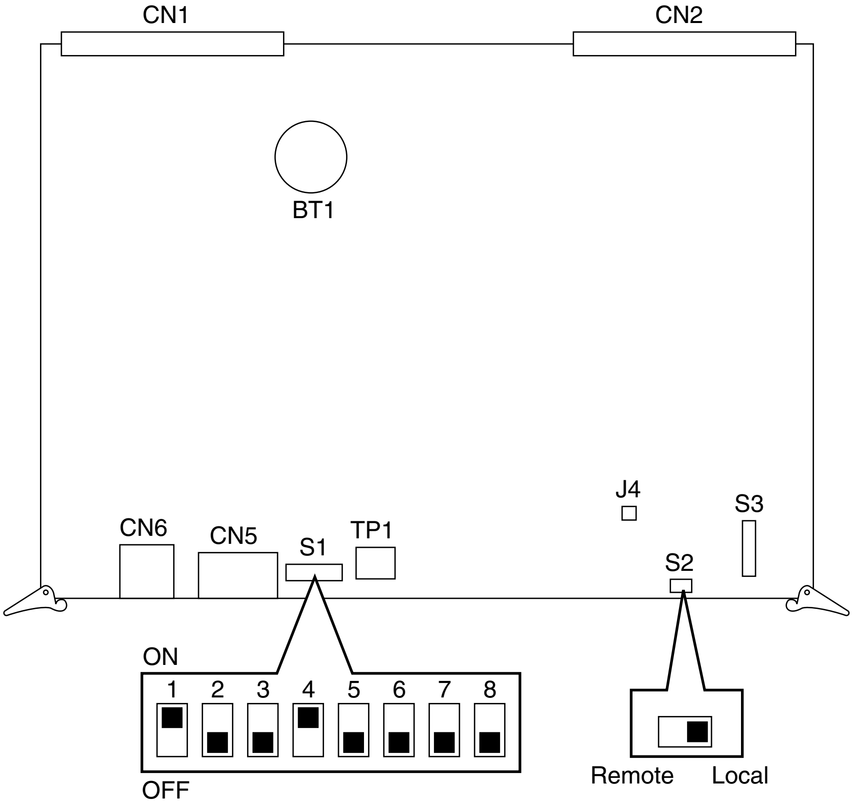
(3) Remove the CPU12A board.


Rail
CN6
#1
[Unplug] LAN cable
FRONT
#2
[Remove] CPU12A board
FR6H4A02.EPS

## ■ DIP switch settings

### ◆ *INSTRUCTION* ◆

*If the CPU12A board is replaced, make DIP switch settings as appropriate.*



S1 settings

| bit | Description | ON | OFF | Default (factory preset) |
|---|---|---|---|---|
| 1 | Service terminal connection enable/disable | — | — | ON (fixed) |
| 2 | For design analysis | — | — | OFF (fixed) |
| 3 | Cassette type selection | Metric | INCH | OFF<br>(It varies depending on the specifications prior to shipment.) |
| 4 | Barcode reader availability selection | With BCR | Without BCR | ON |
| 5 | For design analysis | — | — | OFF (fixed) |
| 6 | Not used | | | OFF (fixed) |
| 7 | Not used | | | OFF (fixed) |
| 8 | For design analysis | — | — | OFF (fixed) |

S2 settings

| Description | Remote | Local | Default |
|---|---|---|---|
| Interlink with CL | — | — | Local (fixed) |

FR6H4A03.EPS

## ■Reinstallation Procedures

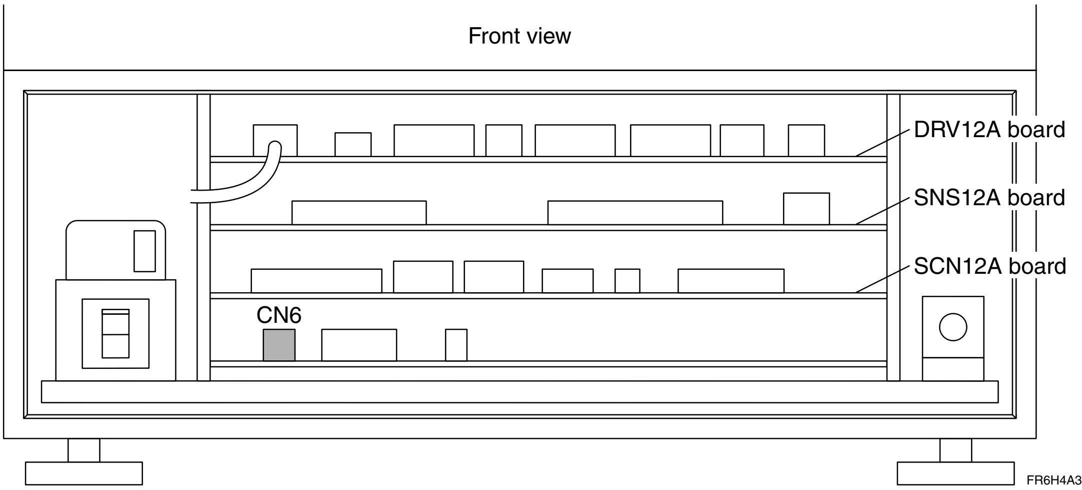
**◆ NOTE ◆**

*When installing the CPU12A board, mount it along the rail.*

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedure

- Make sure that the connector is connected to its correct location.


Front view
DRV12A board
SNS12A board
SCN12A board
CN6

FR6H4A34.EPS

# [4] Change the memory on the CPU12A board to the user settings

(1) Set the IP address of the CL to “172.16.1.20” (default value).

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)” in Troubleshooting Volume

(2) Turn ON the power switch of the RU.

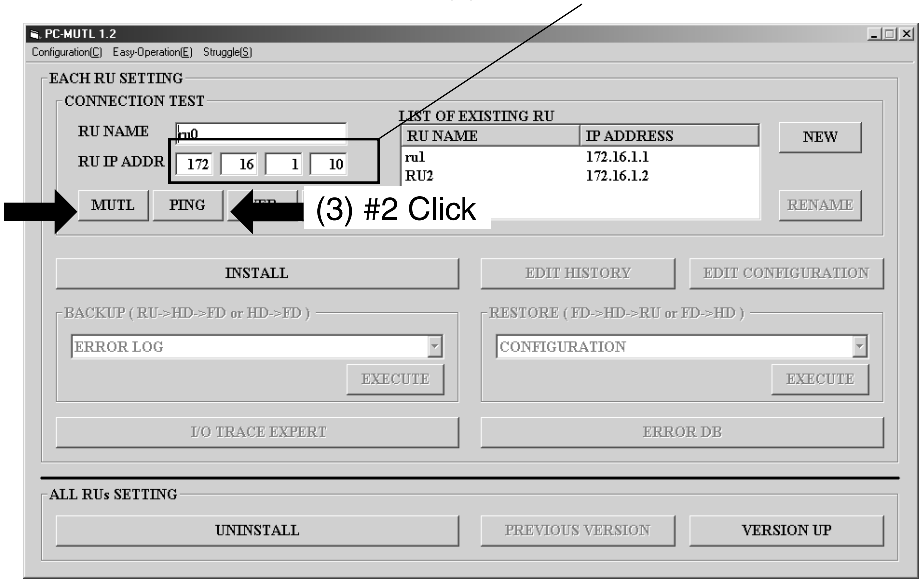
(3) Set the IP address of the RU to its default, and click on the [PING] button.

Referring to the DOS prompt window displayed, make sure that the result is 100% successful.

(4) Click on the [MUTL] button.

(3) #1 Enter the default IP address

(4) Click


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
MUTL
PING
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
ERROR LOG
CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru0
RU IP ADDR: 172 . 16 . 1 . 10

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

(3) #2 Click

FR6H4D10.EPS

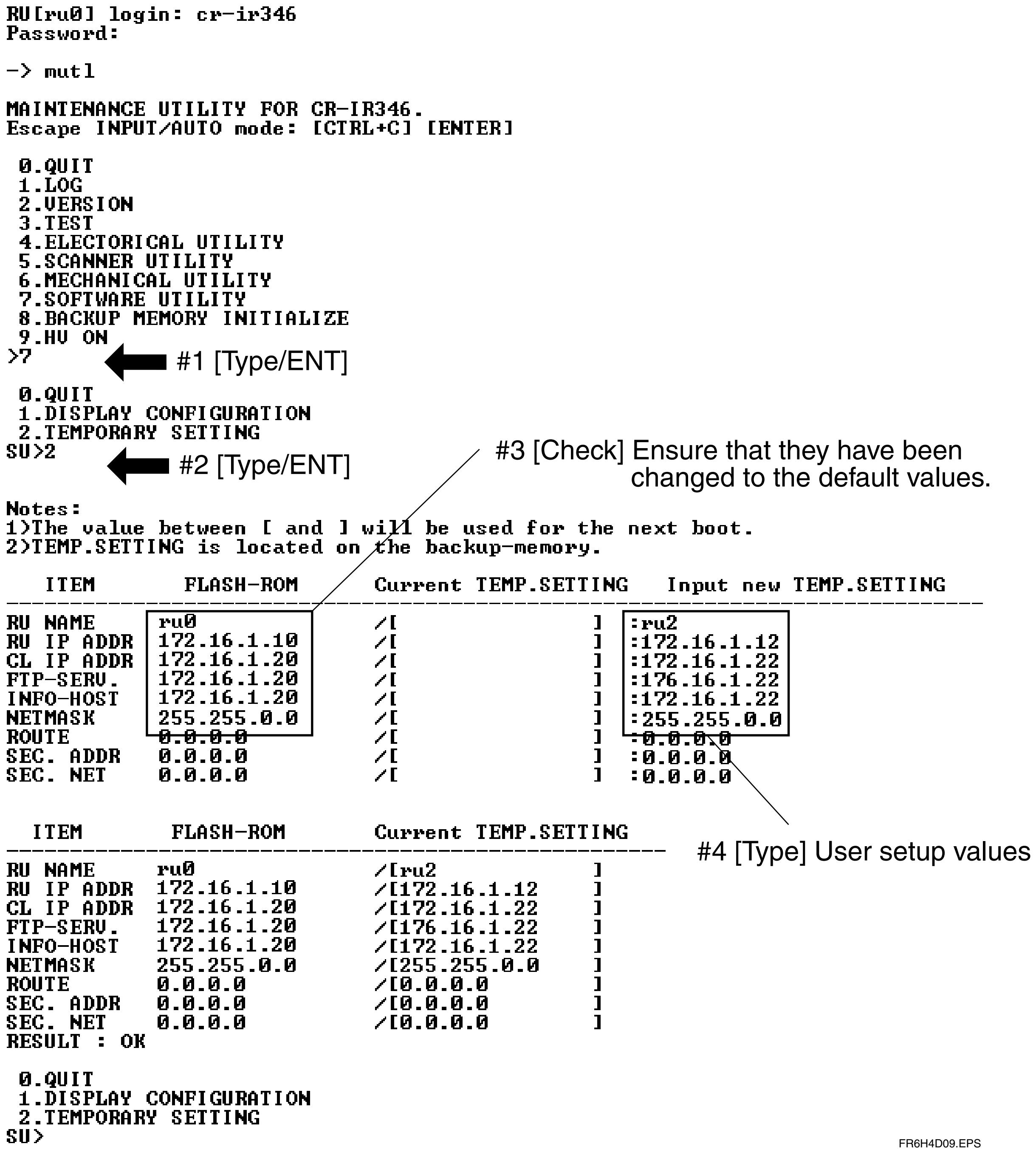
**◆ NOTE ◆**

*In an N-to-N connection setup, if the RU software is to be updated, be sure to execute “PING”, before version update, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be updated.*

(5) Using TEMPORARY SETTING of SOFTWARE UTILITY, change the following items to the user settings that have been noted before the procedure.

(Example) When the user settings are as shown below:

RUNAME : ru2
RU IP ADDR :172.16.1.12
CL IP ADDR :172.16.1.22
FTP-SERV. :172.16.1.22
INFO-HOST :172.16.1.22



```
RU[ru0] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV ON
>7

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>2

Notes:
1)The value between [ and ] will be used for the next boot.
2)TEMP.SETTING is located on the backup-memory.

   ITEM       FLASH-ROM      Current TEMP.SETTING   Input new TEMP.SETTING
-----------------------------------------------------------------------------
RU NAME     ru0            /[                  ]  :ru2
RU IP ADDR  172.16.1.10    /[                  ]  :172.16.1.12
CL IP ADDR  172.16.1.20    /[                  ]  :172.16.1.22
FTP-SERV.   172.16.1.20    /[                  ]  :176.16.1.22
INFO-HOST   172.16.1.20    /[                  ]  :172.16.1.22
NETMASK     255.255.0.0    /[                  ]  :255.255.0.0
ROUTE       0.0.0.0        /[                  ]  :0.0.0.0
SEC. ADDR   0.0.0.0        /[                  ]  :0.0.0.0
SEC. NET    0.0.0.0        /[                  ]  :0.0.0.0

  ITEM       FLASH-ROM       Current TEMP.SETTING
-------------------------------------------------------
RU NAME     ru0            /[ru2               ]
RU IP ADDR  172.16.1.10    /[172.16.1.12       ]
CL IP ADDR  172.16.1.20    /[172.16.1.22       ]
FTP-SERV.   172.16.1.20    /[176.16.1.22       ]
INFO-HOST   172.16.1.20    /[172.16.1.22       ]
NETMASK     255.255.0.0    /[255.255.0.0       ]
ROUTE       0.0.0.0        /[0.0.0.0           ]
SEC. ADDR   0.0.0.0        /[0.0.0.0           ]
SEC. NET    0.0.0.0        /[0.0.0.0           ]
RESULT : OK

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>
```

#1 [Type/ENT]

#2 [Type/ENT]

#3 [Check] Ensure that they have been changed to the default values.

#4 [Type] User setup values

FR6H4D09.EPS

(6) Set the IP address of the CL to the user setup value.

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from Default Setting to User Setting)” in Trouble shooting Volume

(7) Turn OFF the power switch of the RU and then back ON.

**◆ *NOTE* ◆**

*Unless the power switch of the RU is turned OFF and then back ON, the user settings will not become effective.*

# [5] Check the version of the PC-MUTL

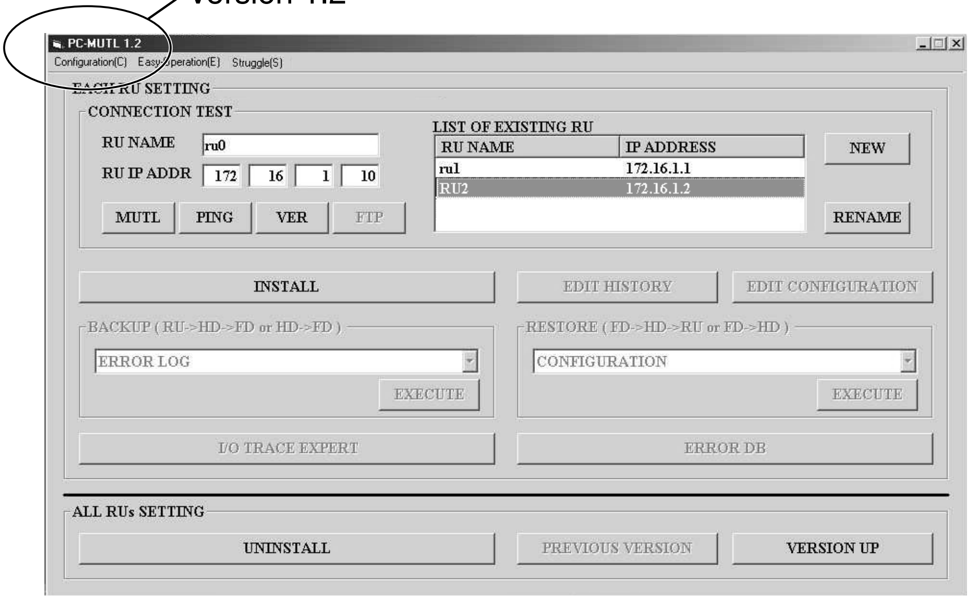
### ◇ *REFERENCE* ◇

*Each version of the PC-MUTL corresponds to each version of the RU software, as follows.*

- *RU software version A01 to A04: PC-MUTL version 1.0*
- *RF software version A05 to A06: PC-MUTL version 1.1*
- *RF software version A07 or later: PC-MUTL version 1.2*

(1) Check the version of the PC-MUTL.

● PC-MUTL version 1.2 or later


Version 1.2

PC-MUTL 1.2

RU NAME: ru0

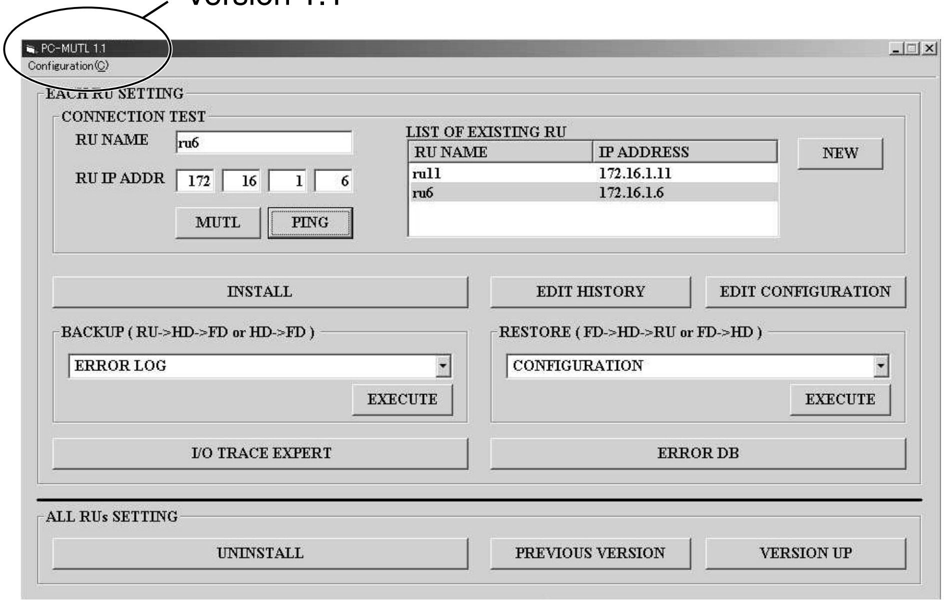
RU IP ADDR: 172 16 1 10

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

Configuration(C)
Easy Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
MUTL
PING
VER
FTP
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D11.EPS

● PC-MUTL version 1.1 or earlier


Version 1.1

PC-MUTL 1.1

RU NAME: ru6

RU IP ADDR: 172 16 1 6

| RU NAME | IP ADDRESS |
|---|---|
| ru11 | 172.16.1.11 |
| ru6 | 172.16.1.6 |

Configuration(C)
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D12.EPS

(2) Confirm the procedure for installing the RU application software.

Because the procedure for installing the RU application software differs depending on the version of the PC-MUTL, perform appropriate procedure for the PC-MUTL version employed.

● For PC-MUTL version 1.2 or later => Go to procedure [6].

➯ Skip procedure [7].

● For PC-MUTL version 1.1 or earlier => Go to procedure [7].

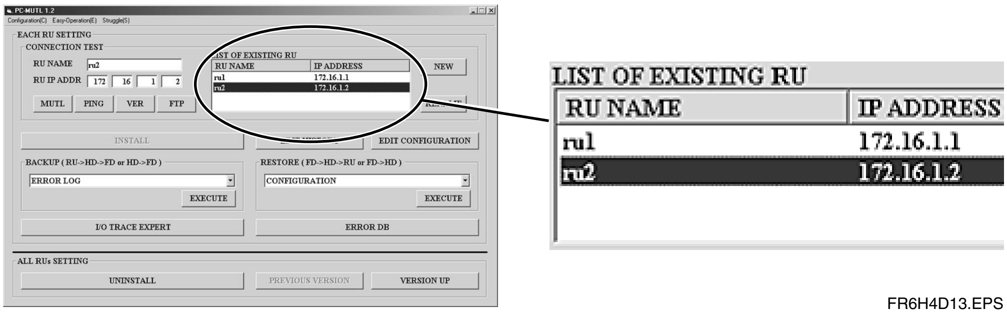
➯ Skip procedure [6].

# [6] Install the application software
## Procedure for installing PC-MUTL version 1.2 or later (RU software version A07 or later)

**CAUTION**

*Do not power OFF the RU while the software is being installed.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

(1) From “LIST OF EXISTING RU”, select a RU.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 16 1 2

ERROR LOG

CONFIGURATION

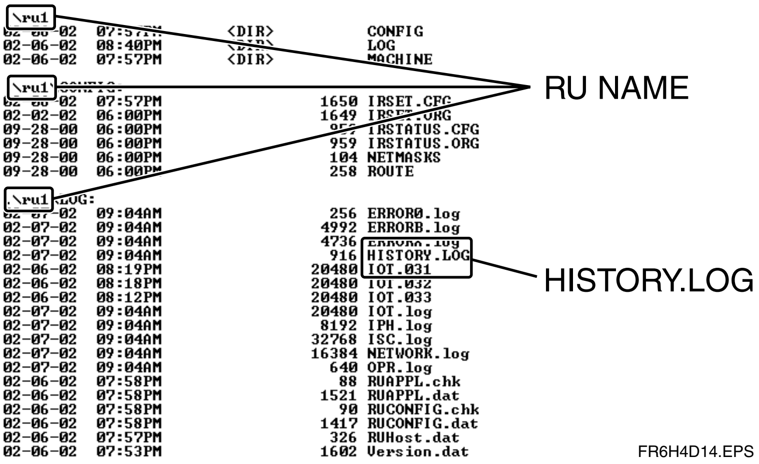
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H4D13.EPS

(2) Click on the [FTP] button.

- Screen display where the FTP server is accessed on the CL



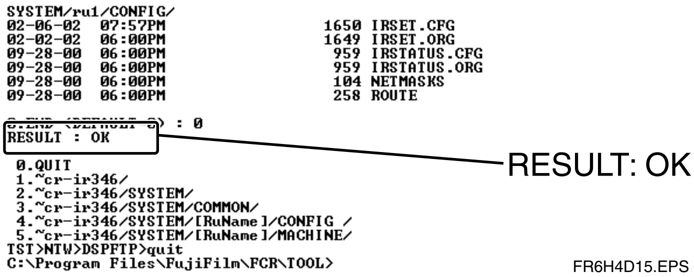
```
\ru1
02-06-02  07:57PM       <DIR>          CONFIG
02-06-02  08:40PM       <DIR>          LOG
02-06-02  07:57PM       <DIR>          MACHINE

\ru1\CONFIG:
02-06-02  07:57PM                 1650 IRSET.CFG
02-02-02  06:00PM                 1649 IRSET.ORG
09-28-00  06:00PM                  959 IRSTATUS.CFG
09-28-00  06:00PM                  959 IRSTATUS.ORG
09-28-00  06:00PM                  104 NETMASKS
09-28-00  06:00PM                  258 ROUTE

.\ru1\LOG:
02-07-02  09:04AM                  256 ERROR0.log
02-07-02  09:04AM                 4992 ERRORB.log
02-07-02  09:04AM                 4736 ERRORA.log
02-07-02  09:04AM                  916 HISTORY.LOG
02-06-02  08:19PM                20480 IOT.031
02-06-02  08:18PM                20480 IOT.032
02-06-02  08:12PM                20480 IOT.033
02-07-02  09:04AM                20480 IOT.log
02-07-02  09:04AM                 8192 IPH.log
02-07-02  09:04AM                32768 ISC.log
02-07-02  09:04AM                16384 NETWORK.log
02-07-02  09:04AM                  640 OPR.log
02-06-02  07:58PM                   88 RUAPPL.chk
02-06-02  07:58PM                 1521 RUAPPL.dat
02-06-02  07:58PM                   90 RUCONFIG.chk
02-06-02  07:58PM                 1417 RUCONFIG.dat
02-06-02  07:57PM                  326 RUHost.dat
02-06-02  07:53PM                 1602 Version.dat
```

RU NAME

HISTORY.LOG

FR6H4D14.EPS

- Screen display where the FTP server is accessed from the RU



```
SYSTEM/ru1/CONFIG/
02-06-02  07:57PM                 1650 IRSET.CFG
02-02-02  06:00PM                 1649 IRSET.ORG
09-28-00  06:00PM                  959 IRSTATUS.CFG
09-28-00  06:00PM                  959 IRSTATUS.ORG
09-28-00  06:00PM                  104 NETMASKS
09-28-00  06:00PM                  258 ROUTE

0.END (DEFAULT 0) : 0
RESULT : OK

 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>quit
C:\Program Files\FujiFilm\FCR\TOOL>
```

RESULT: OK

FR6H4D15.EPS

(3) Make sure that the FTP server is normal.

[Checkpoints]

(a) RU NAME – Make sure that RU NAME is the one that has been set.
(b) HISTORY.LOG – Make sure that the capacity is not zero bytes.
(c) RESULT: OK – Make sure that “OK” is displayed.

**◇ REFERENCE ◇**

*If any of the three checkpoints (a), (b), and (c) results in “NG”, verify the IP address and RU NAME.*
*☞ “Installation (IN-B), Appendix 2, Section 8” in CL Service Manual*

**CAUTION**

*Do not power OFF the RU while the software is being installed.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

(4) Turn OFF the power switch of the RU.

(5) Start the CL software.

Click on **Start** and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

➪ The CL-AP starts up in about one minutes.

A RU boot-up message appears on the monitor of the CL, and after about one minute has passed, the RU becomes ready for operation.

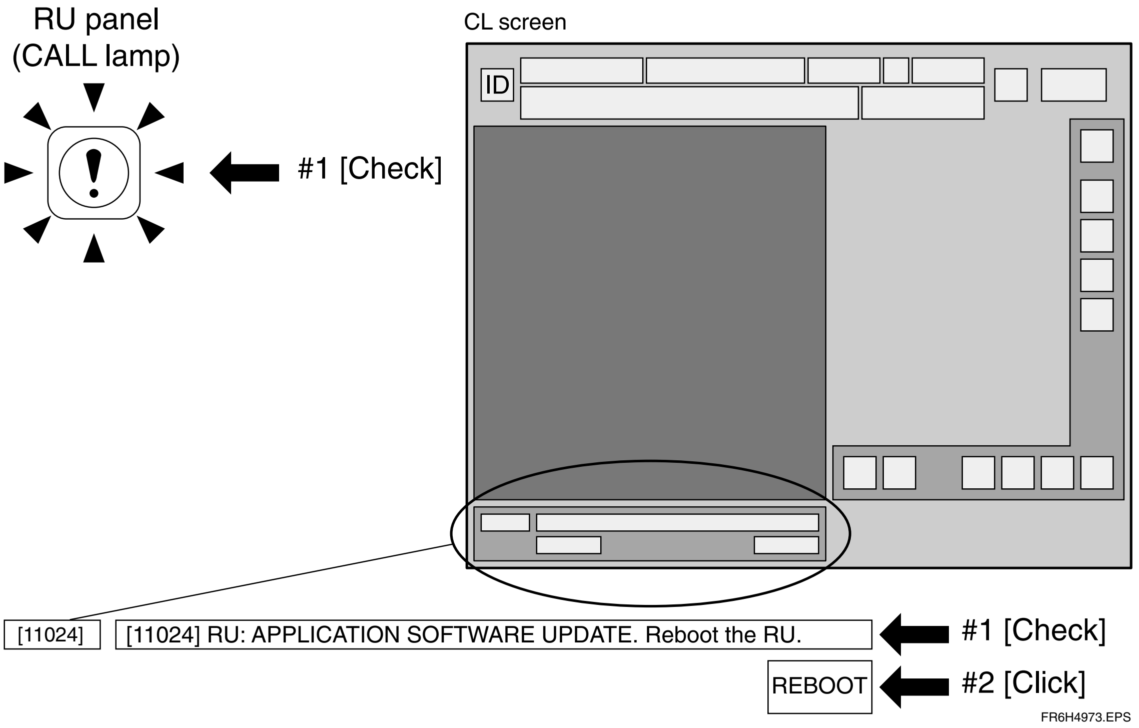
**◇ REFERENCE ◇**

*If the RU is powered ON before booting up the CL, the “reboot” screen will not appear.*

(6) Turn ON the power switch of the RU.

(7) Verify that the RU call lamp is illuminated, with [11024] displayed on the CL screen, and restart the RU from the CL screen.

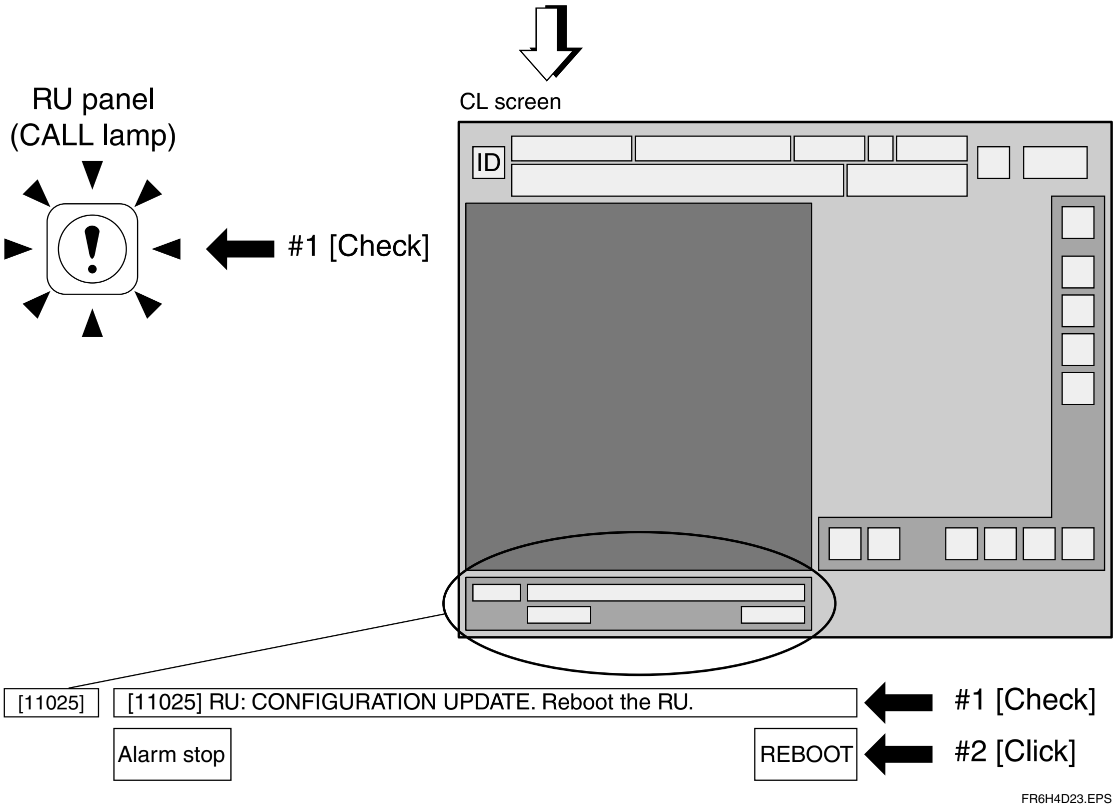
When it is restarted, the RU is power OFF and then back ON with all indicators on the panel illuminated, and an audible alarm (three short beeps) is generated.


RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11024]
#1 [Check]
REBOOT
#2 [Click]
FR6H4973.EPS

[11024] RU: APPLICATION SOFTWARE UPDATE. Reboot the RU.

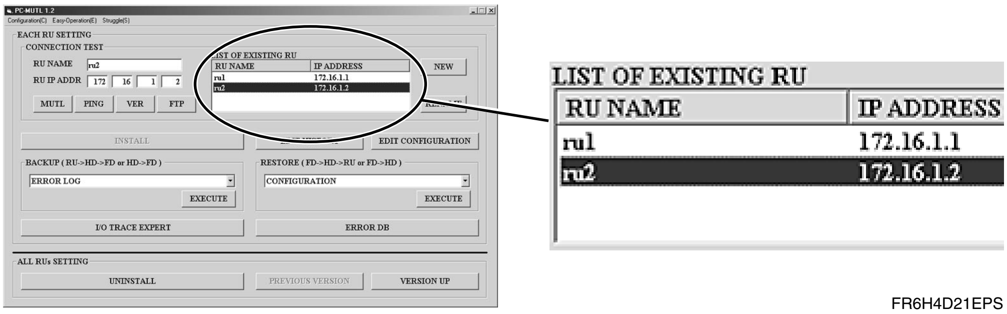
(8) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and restart the RU from the CL screen.

When it is restarted, all the indicators on the panel are illuminated, and an audible alarm is generated.


RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11025]
#1 [Check]
Alarm stop
REBOOT
#2 [Click]
FR6H4D23.EPS

[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

(9) From “LIST OF EXISTING RU”, select a RU.



PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 . 16 . 1 . 2

BACKUP: ERROR LOG

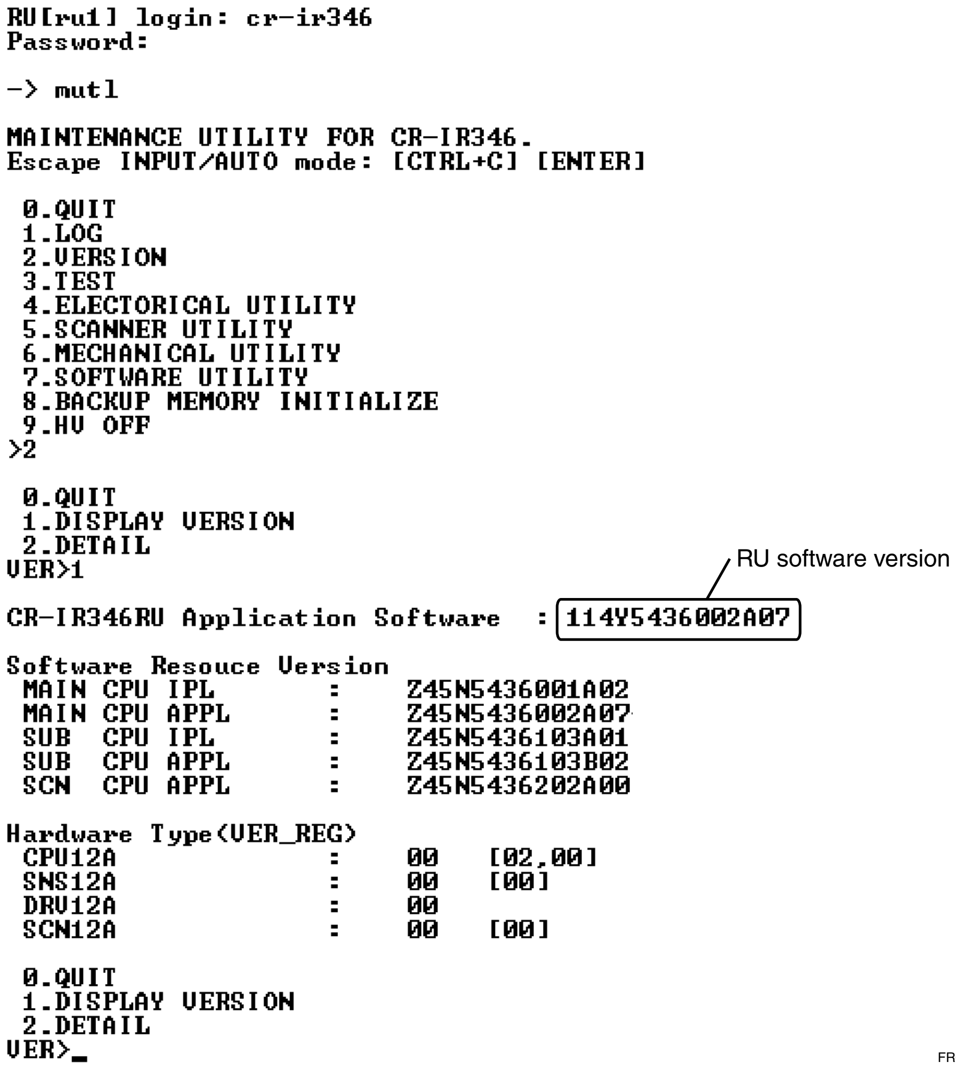
RESTORE: CONFIGURATION

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H4D21EPS

(10) Click on [VER] to confirm the software version.

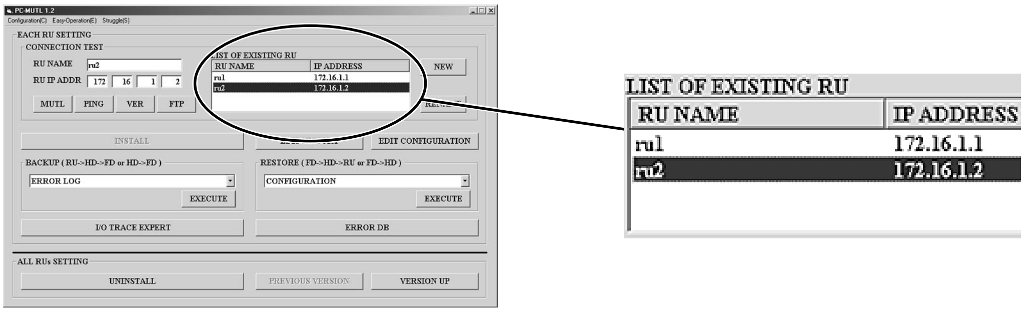


```
RU[ru1] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV OFF
>2

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>1

CR-IR346RU Application Software   : 114Y5436002A07

Software Resouce Version
 MAIN CPU IPL       :    Z45N5436001A02
 MAIN CPU APPL      :    Z45N5436002A07
 SUB  CPU IPL       :    Z45N5436103A01
 SUB  CPU APPL      :    Z45N5436103B02
 SCN  CPU APPL      :    Z45N5436202A00

Hardware Type(VER_REG)
 CPU12A             :    00   [02,00]
 SNS12A             :    00   [00]
 DRV12A             :    00
 SCN12A             :    00   [00]

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>_
```

RU software version

FR6H4D22.EPS

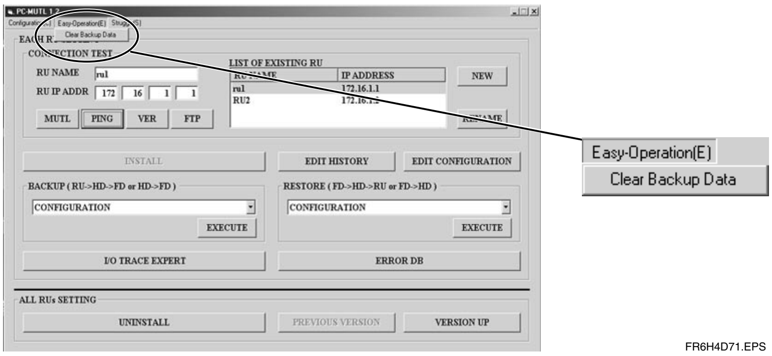
(11) From “LIST OF EXISTING RU”, select a RU where the backup memory is to be cleared.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
RU NAME ru2
RU IP ADDR 172 16 1 2
MUTL PING VER FTP
LIST OF EXISTING RU
RU NAME IP ADDRESS
ru1 172.16.1.1
ru2 172.16.1.2
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D70.EPS

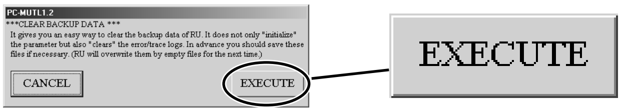
(12) [Easy-Operation] → [Clear Backup Data]

A dialog box appears to ask whether to execute clear.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
Clear Backup Data
EACH RU SETTING
CONNECTION TEST
RU NAME ru1
RU IP ADDR 172 16 1 1
MUTL PING VER FTP
LIST OF EXISTING RU
RU NAME IP ADDRESS
ru1 172.16.1.1
RU2 172.16.1.2
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
CONFIGURATION
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
Easy-Operation(E)
Clear Backup Data

FR6H4D71.EPS

(13) Click on the [EXECUTE] button.

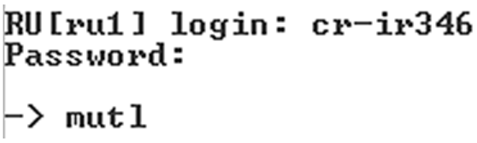

PC-MUTL1.2
CANCEL
EXECUTE
EXECUTE

***CLEAR BACKUP DATA ***

It gives you an easy way to clear the backup data of RU. It does not only "initialize" the parameter but also "clears" the error/trace logs. In advance you should save these files if necessary. (RU will overwrite them by empty files for the next time.)

FR6H4D72.EPS

A DOS prompt appears.



```
RU[ru1] login: cr-ir346
Password:

-> mutl
```

FR6H4D73.EPS

(14) Start the M-Utility.

(15) [1][ENT] → [1][ENT] → [1][ENT] → [3][ENT]

Make sure that the error log has been cleared.

### ◇ *REFERENCE* ◇

*Even when “Clear Backup Memory Data” is executed, ISC LOG of TRACE LOGS is not cleared.*

(16) Check the "Time Zone" setting of the PC.

Check the PC's time zone setting and perform appropriate procedure depending on that setting.

- Geographical regions where the "Automatically adjust clock for daylight saving changes" checkbox is checked => Go to step (17).
- Geographical regions where the "Automatically adjust clock for daylight saving changes" checkbox is not checked => Go to "[8] Restore HISTORY LOG" on MC-212.

  ➩ Skip steps (17), (18), and (19).

**◆ NOTE ◆**

*In geographical regions where the "Automatically adjust clock for daylight saving changes" checkbox is checked, steps (17), (18), and (19) should be performed.*

(17) Exit the CL software.

**◇ REFERENCE ◇**

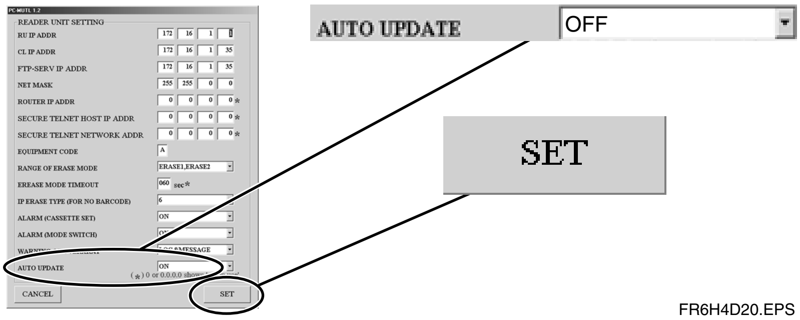
*To quit the CL software, hold down the <SHIFT> key and choose “Shut Down” from the “FUJI FILM” menu.*

(18) Start “EDIT CONFIGURATION”.

(19) Set “AUTO UPDATE” to “OFF” and click on the [SET] button.

Then, all the panel indicators on the RU are lit with an audible alarm generated.

After about two minutes have passed, the PC-MUTL window appears on screen.



PC-MUTL 1.2

READER UNIT SETTING

RU IP ADDR 172 16 1 1

CL IP ADDR 172 16 1 35

FTP-SERV IP ADDR 172 16 1 35

NET MASK 255 255 0 0

ROUTER IP ADDR 0 0 0 0 *

SECURE TELNET HOST IP ADDR 0 0 0 0 *

SECURE TELNET NETWORK ADDR 0 0 0 0 *

EQUIPMENT CODE A

RANGE OF ERASE MODE ERASE1,ERASE2

EREASE MODE TIMEOUT 060 sec*

IP ERASE TYPE (FOR NO BARCODE) 6

ALARM (CASSETTE SET) ON

ALARM (MODE SWITCH) ON

WARNING LOG &MESSAGE

AUTO UPDATE ON

(*) 0 or 0.0.0.0 shows

AUTO UPDATE OFF

FR6H4D20.EPS

## [7] Install the application software
## Procedure for installing PC-MUTL version 1.1 or earlier (RU software version A06 or earlier)

**CAUTION**

*Do not power OFF the RU while the software is being installed.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

**◆ NOTES ◆**

- *If the software versions are identical between the flash ROM of the CPU12A board and the HDD of the CL, step (2) for installing the application software is not performed.*
- *If the contents are identical between the flash ROM of the CPU12A board and the HDD of the CL, step (6) for installing the configuration data is not performed.*

(1) Turn OFF the power switch of the RU.

(2) Start the CL software.

Click on Start and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

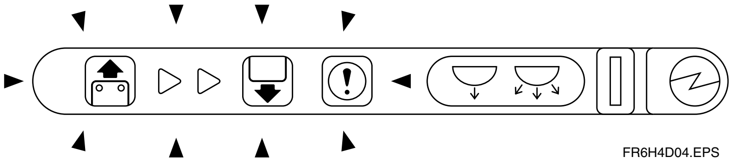
**◇ REFERENCE ◇**

*If the RU is powered ON before booting up the CL, the “reboot” screen will not appear.*

(3) Turn ON the power switch of the RU.

**◇ REFERENCE ◇**

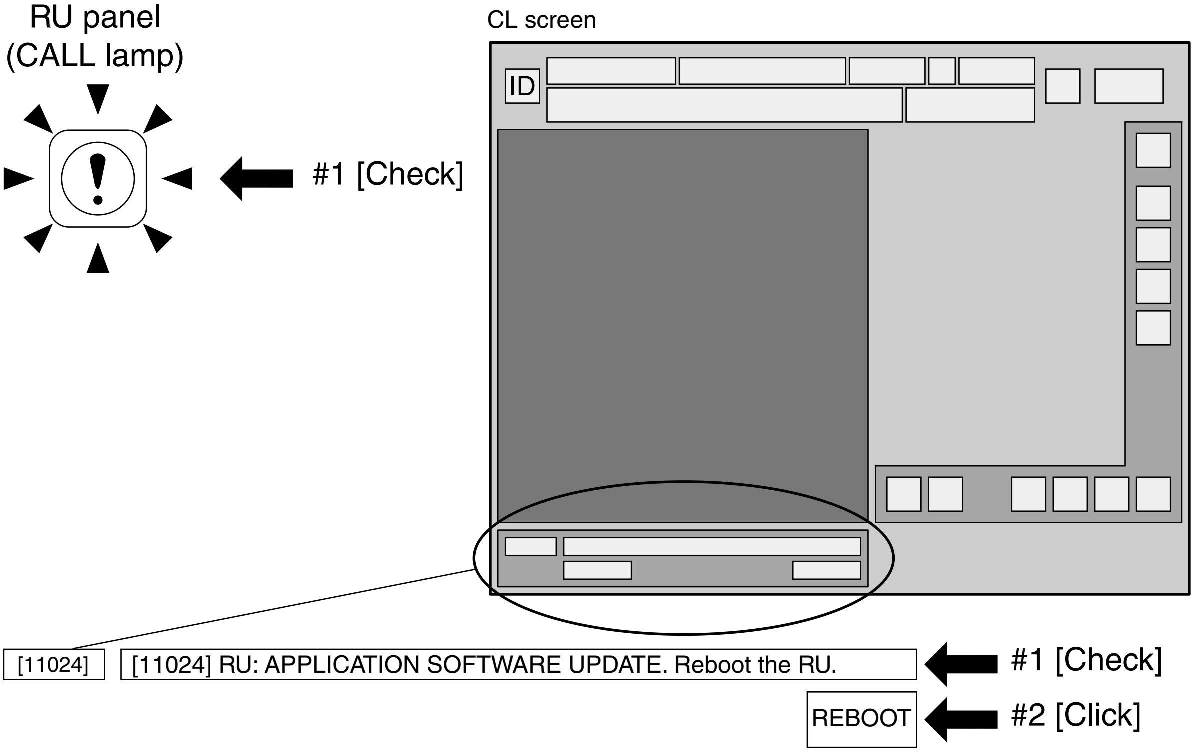
*When the RU is powered OFF and then back ON, the installation of the application software and configuration data from the CL is initiated.*
*At this time, all the indicators on the panel of the RU are illuminated, and an audible alarm is generated.*



FR6H4D04.EPS

(4) Verify that the RU call lamp is illuminated, with [11024] displayed on the CL screen, and restart the RU from the CL screen.

When it is restarted, the RU is power OFF and then back ON with all indicators on the panel illuminated, and an audible alarm (three short beeps) is generated.

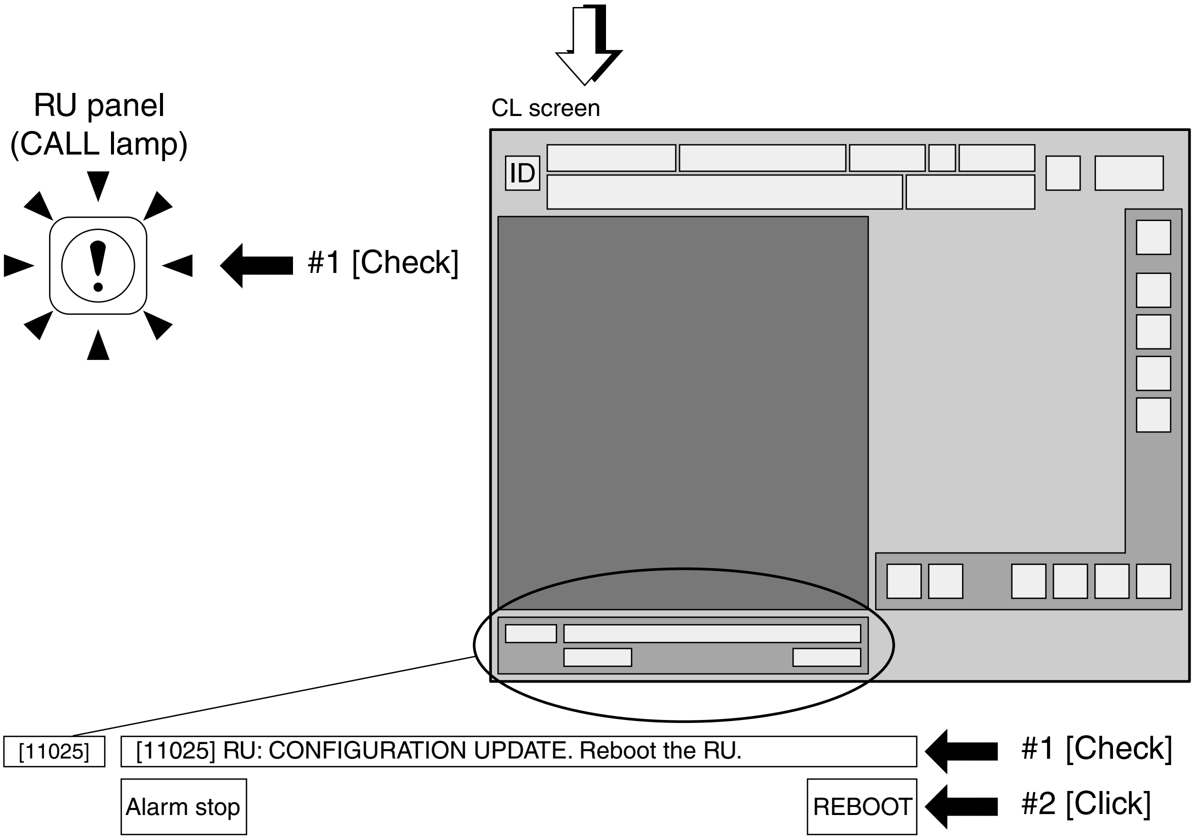

RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11024]
#1 [Check]
REBOOT
#2 [Click]

[11024] RU: APPLICATION SOFTWARE UPDATE. Reboot the RU.

FR6H4973.EPS

(5) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and restart the RU from the CL screen.

When it is restarted, all the indicators on the panel are illuminated, and an audible alarm is generated.

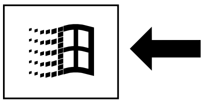

RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11025]
#1 [Check]
Alarm stop
REBOOT
#2 [Click]

[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

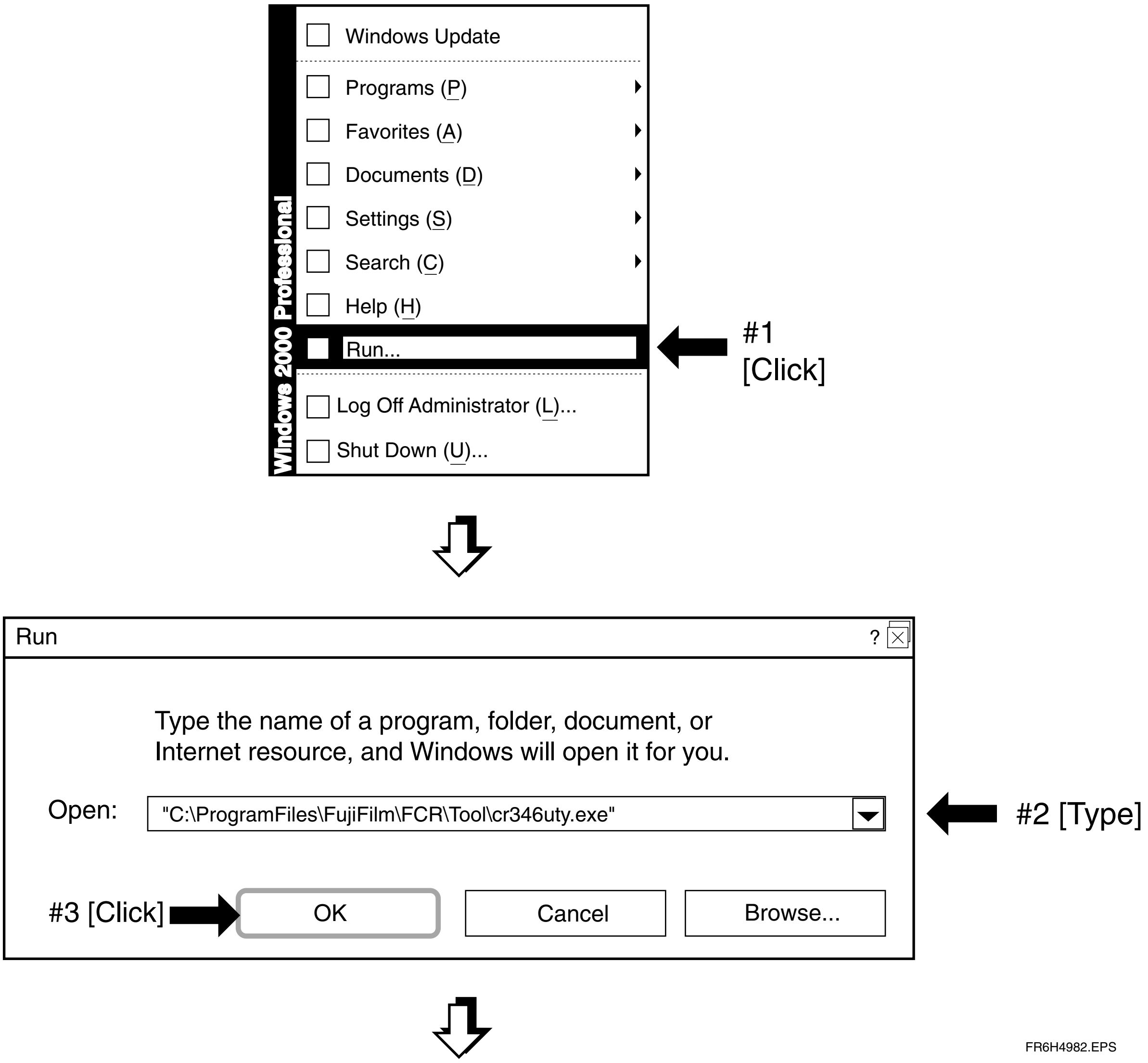
FR6H4D23.EPS

(6) Exit the CL software.

(7) Press the [Windows] key to open the Start menu of Windows.



(8) Select [Run...] from the Start menu of Windows, and type ["C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"] to open the MAINTENANCE UTILITY, and start M-Utility.

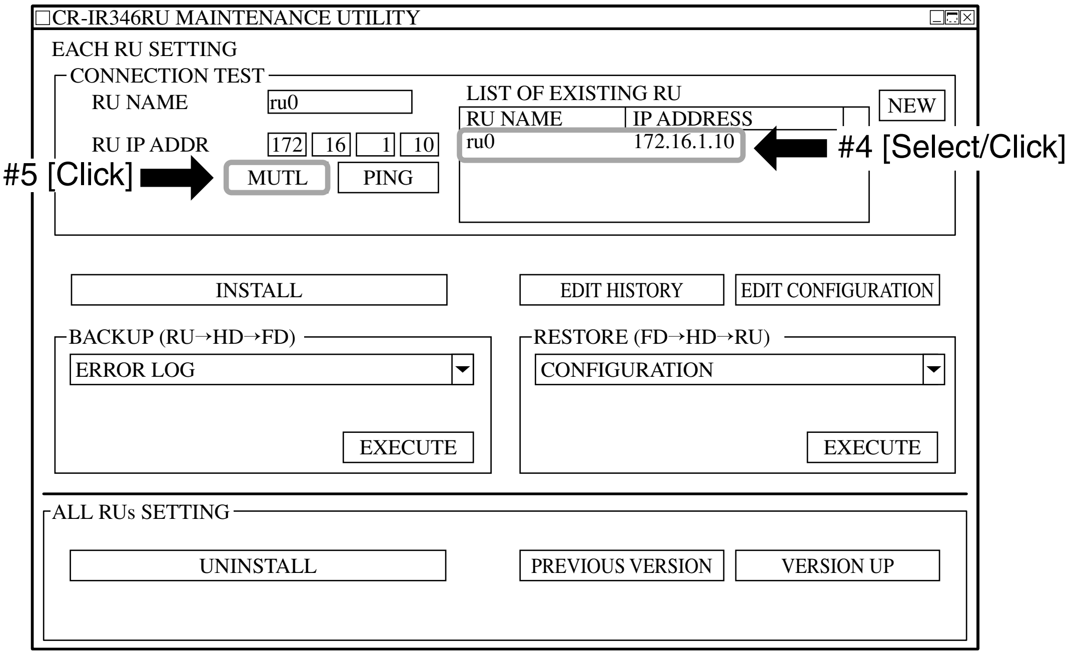

Windows 2000 Professional
Windows Update
Programs (P)
Favorites (A)
Documents (D)
Settings (S)
Search (C)
Help (H)
Run...
Log Off Administrator (L)...
Shut Down (U)...
#1
[Click]
Run
?
#2 [Type]
#3 [Click]
OK
Cancel
Browse...

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: "C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"

FR6H4982.EPS

RU SERVICE UTILITY screen



☐CR-IR346RU MAINTENANCE UTILITY

EACH RU SETTING

CONNECTION TEST

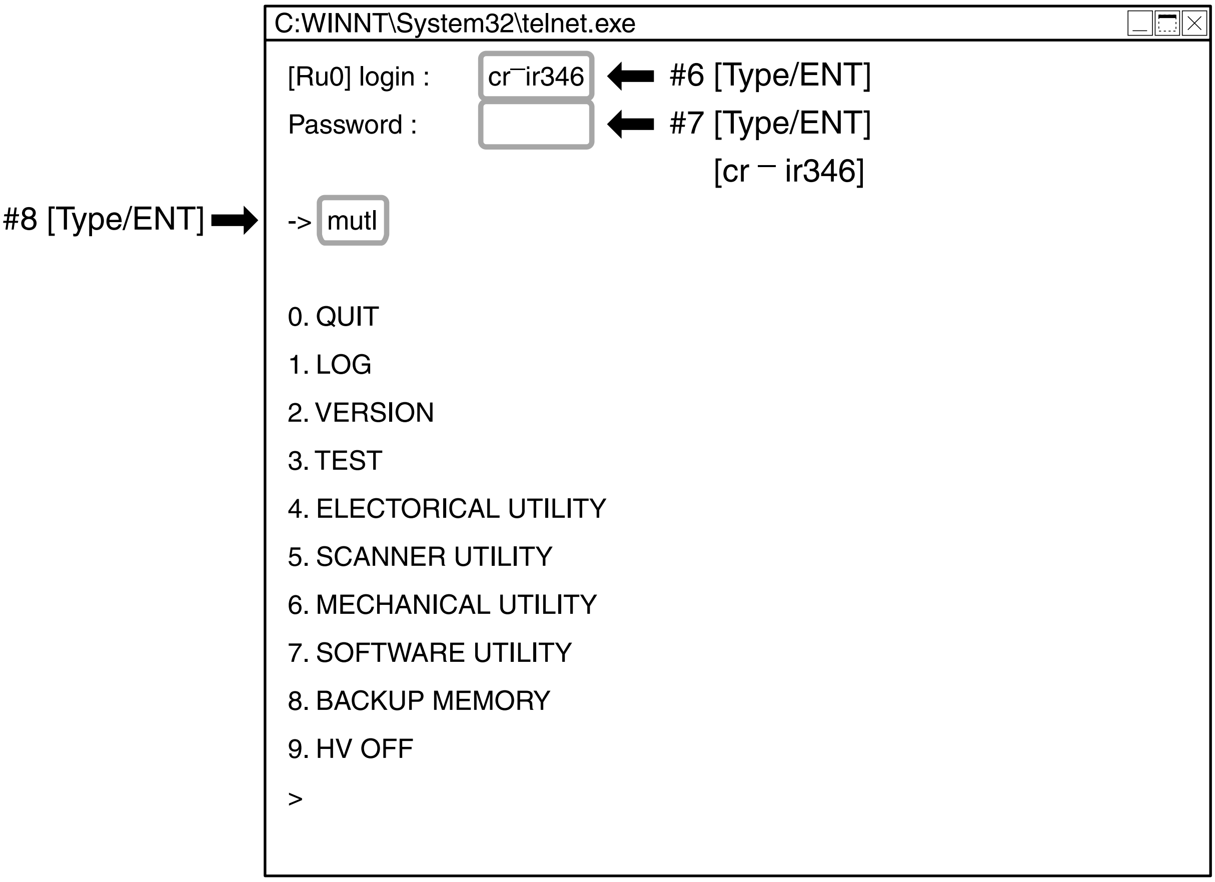
RU NAME ru0

RU IP ADDR 172 16 1 10

#5 [Click] MUTL

#4 [Select/Click]

PING
LIST OF EXISTING RU
NEW
RU NAME
IP ADDRESS
ru0
172.16.1.10
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU→HD→FD)
ERROR LOG
EXECUTE
RESTORE (FD→HD→RU)
CONFIGURATION
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP



C:WINNT\System32\telnet.exe

```
[Ru0] login :  cr¯ir346
Password :

-> mutl

0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTORICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
>
```

#6 [Type/ENT]

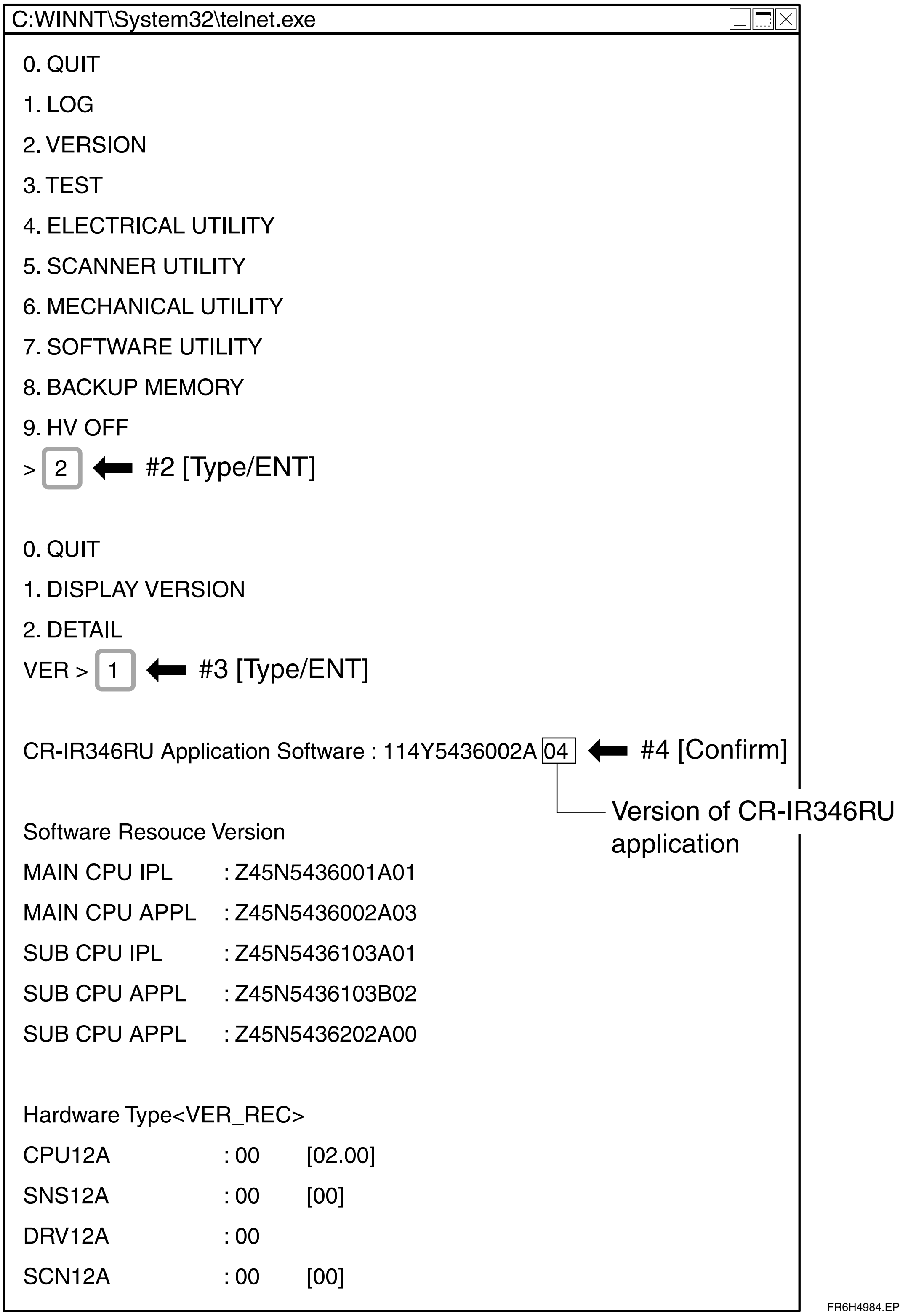
#7 [Type/ENT]
[cr ¯ ir346]

#8 [Type/ENT]

FR6H4983.EPS

(9) Select VERSION to confirm the version of the CR-IR346RU application software.

Example: When the version is updated to A03 or A04



```
C:WINNT\System32\telnet.exe

0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
> 2

0. QUIT
1. DISPLAY VERSION
2. DETAIL
VER > 1

CR-IR346RU Application Software : 114Y5436002A04

Software Resouce Version
MAIN CPU IPL      : Z45N5436001A01
MAIN CPU APPL     : Z45N5436002A03
SUB CPU IPL       : Z45N5436103A01
SUB CPU APPL      : Z45N5436103B02
SUB CPU APPL      : Z45N5436202A00

Hardware Type<VER_REC>
CPU12A            : 00     [02.00]
SNS12A            : 00     [00]
DRV12A            : 00
SCN12A            : 00     [00]
```

#2 [Type/ENT]

#3 [Type/ENT]

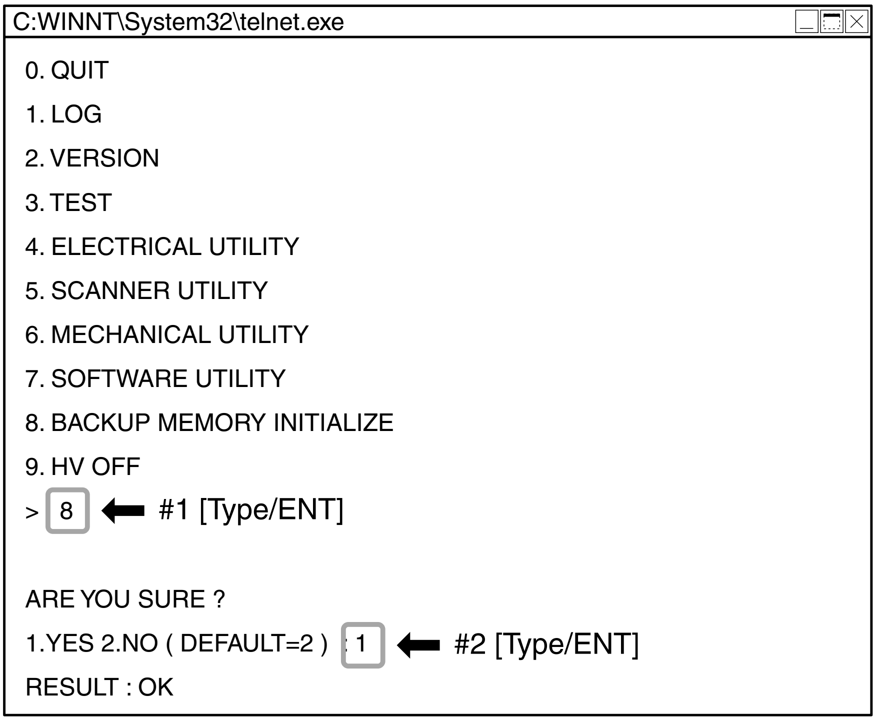
#4 [Confirm]

Version of CR-IR346RU application

FR6H4984.EPS

(10) Select “BACKUP MEMORY INITIALIZE” and initialize the backup memory.

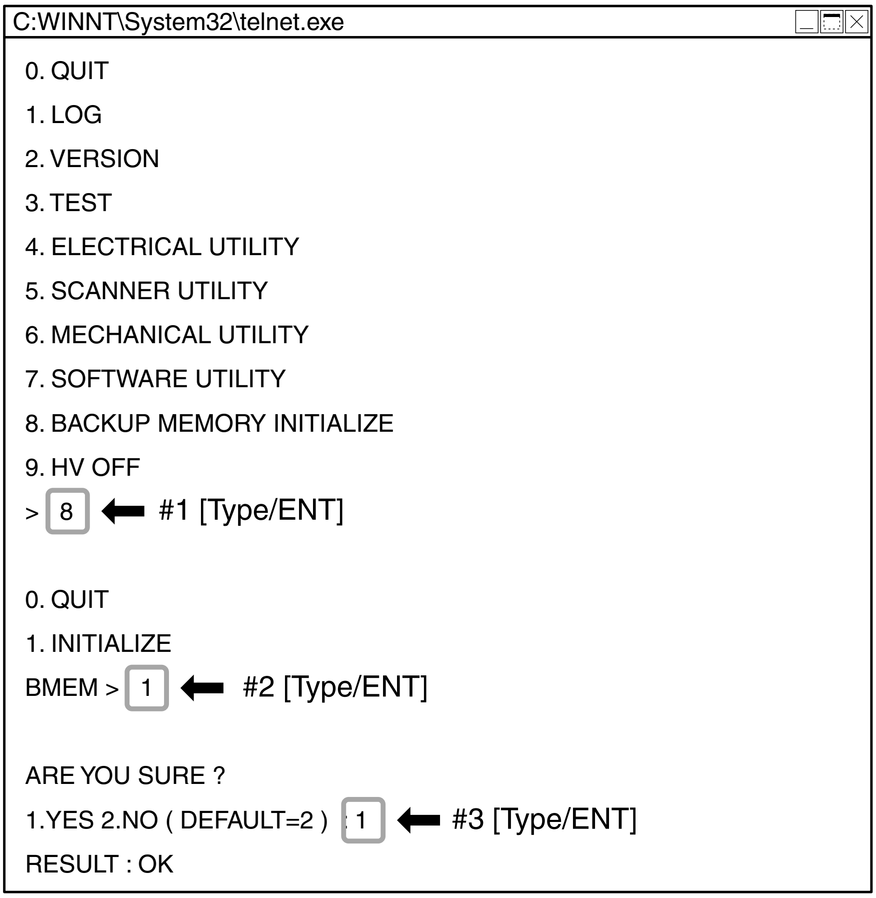
❍ For software version of A05 or later



C:WINNT\System32\telnet.exe

```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY INITIALIZE
9. HV OFF
> 8  ⬅ #1 [Type/ENT]

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1  ⬅ #2 [Type/ENT]
RESULT : OK
```

❍ For software version of A04 or earlier

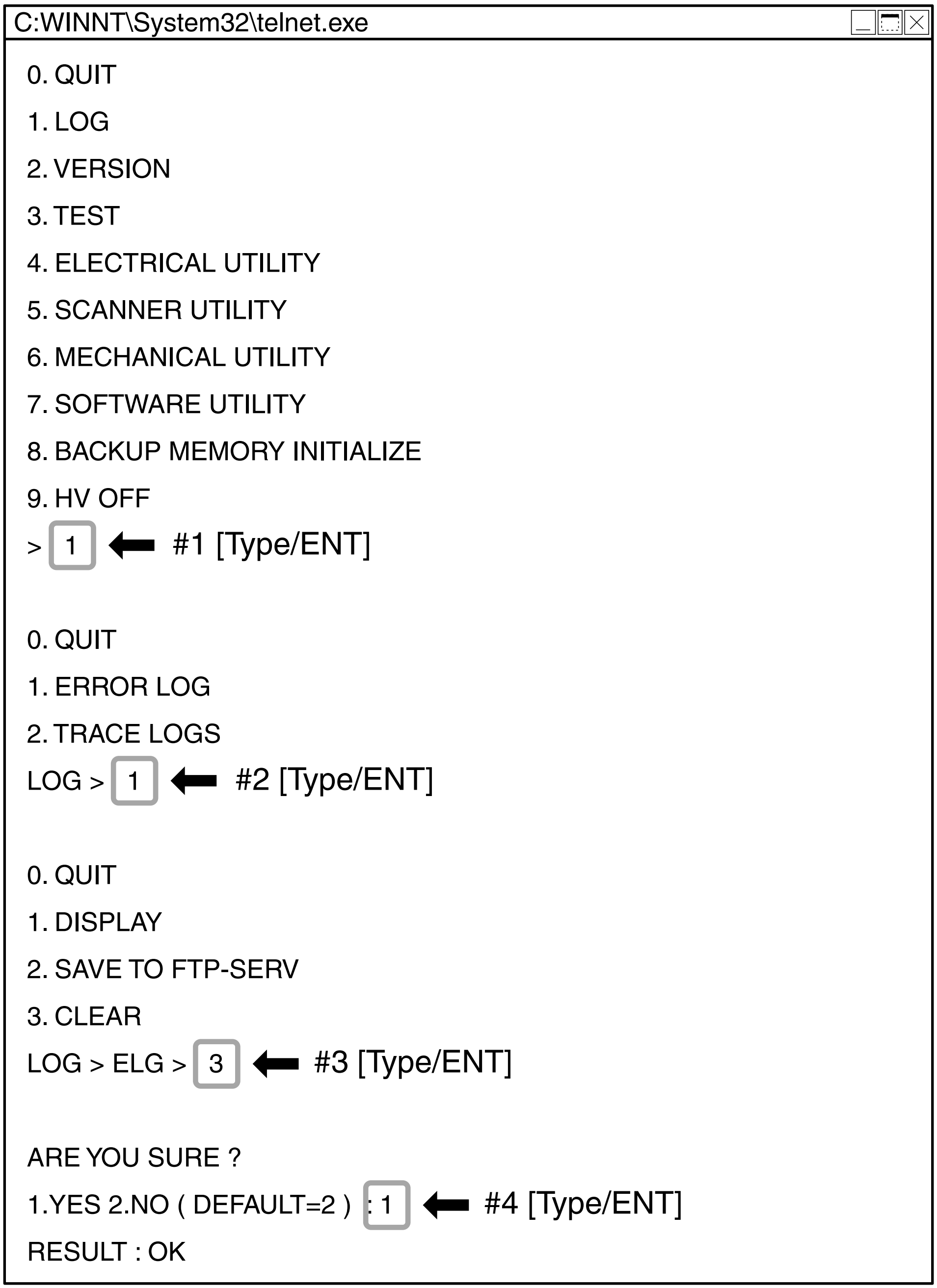


C:WINNT\System32\telnet.exe

```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY INITIALIZE
9. HV OFF
> 8  ⬅ #1 [Type/ENT]

0. QUIT
1. INITIALIZE
BMEM > 1  ⬅ #2 [Type/ENT]

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1  ⬅ #3 [Type/ENT]
RESULT : OK
```

FR6H4985.EPS

(11) Select “LOG” and initialize the error log.

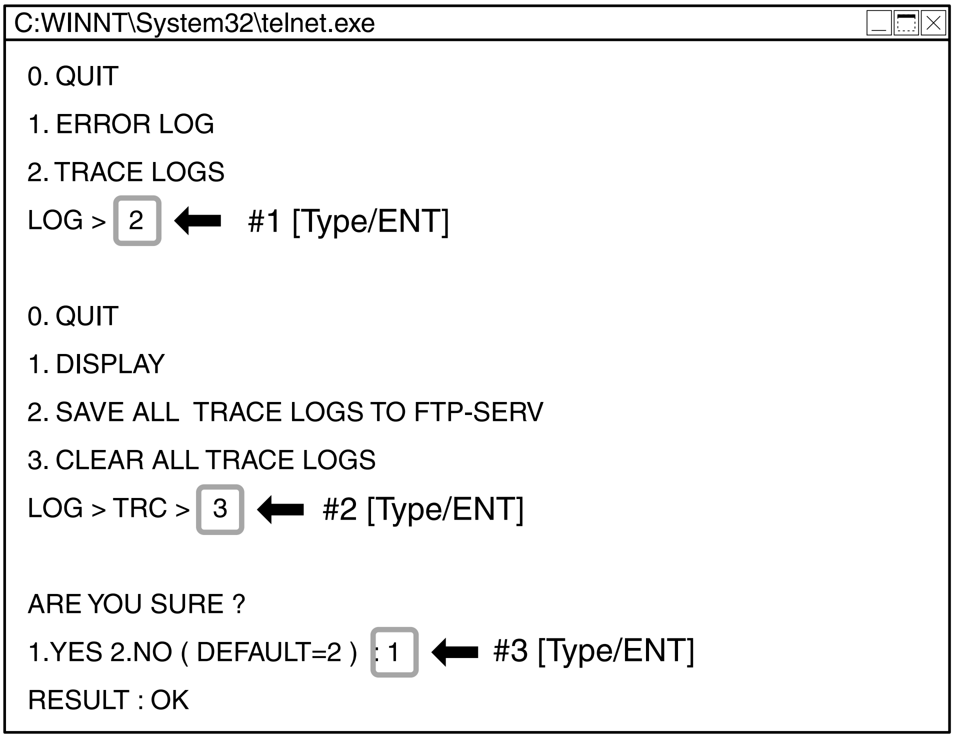


C:WINNT\System32\telnet.exe

```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY INITIALIZE
9. HV OFF
> 1   ← #1 [Type/ENT]

0. QUIT
1. ERROR LOG
2. TRACE LOGS
LOG > 1   ← #2 [Type/ENT]

0. QUIT
1. DISPLAY
2. SAVE TO FTP-SERV
3. CLEAR
LOG > ELG > 3   ← #3 [Type/ENT]

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1   ← #4 [Type/ENT]
RESULT : OK
```

FR6H4986.EPS

(12) Select “LOG” and initialize the trace log.



C:WINNT\System32\telnet.exe

```
0. QUIT
1. ERROR LOG
2. TRACE LOGS
LOG > 2

0. QUIT
1. DISPLAY
2. SAVE ALL  TRACE LOGS TO FTP-SERV
3. CLEAR ALL TRACE LOGS
LOG > TRC > 3

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1
RESULT : OK
```

#1 [Type/ENT]

#2 [Type/ENT]

#3 [Type/ENT]

FR6H4987.EPS

(13) Click on ☒ to quit the PC-MUTL.

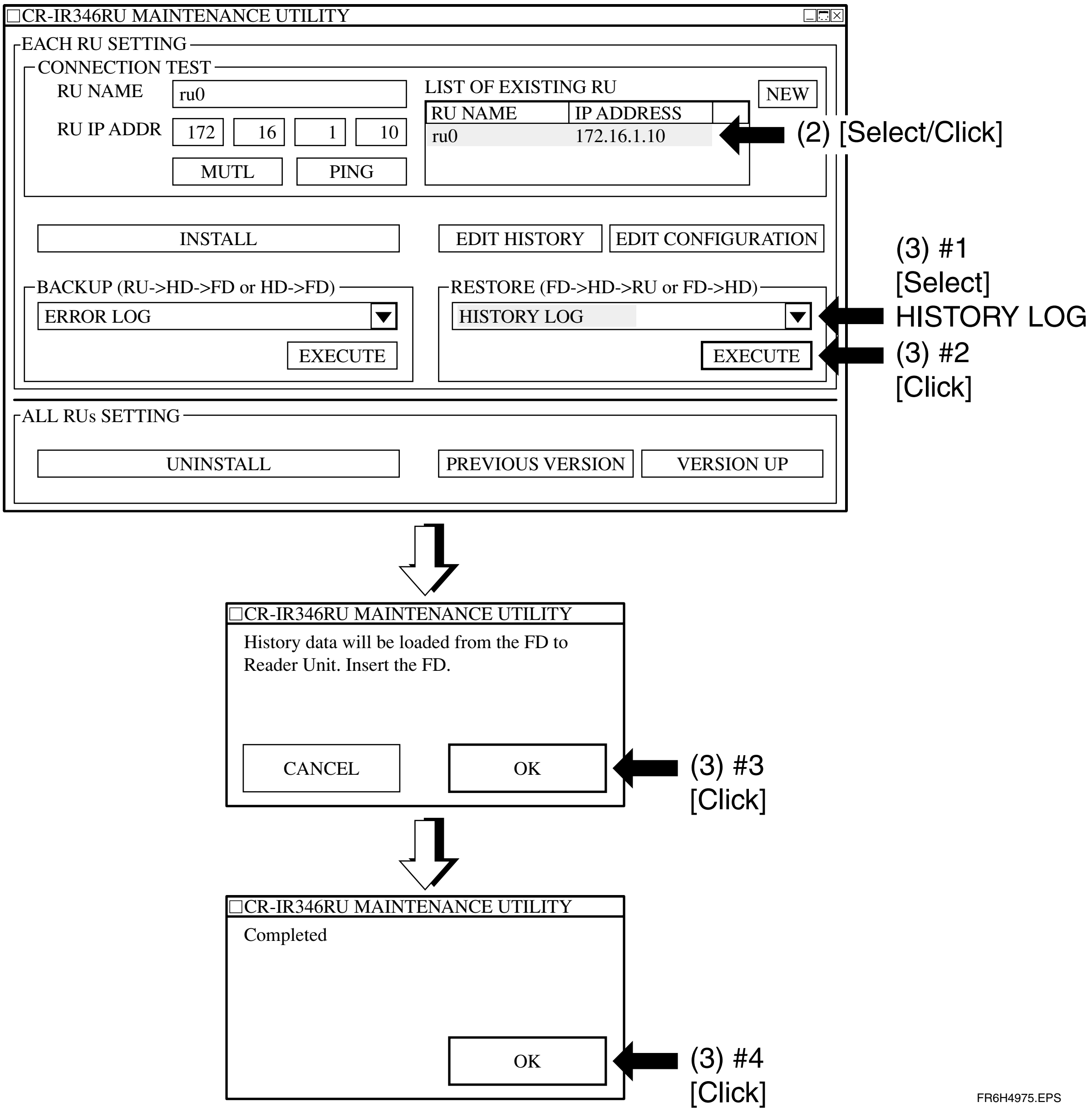
## [8] Restore HISTORY LOG

(1) Put into the FD drive the floppy disk containing HISTORY LOG that has backed up before replacing the CPU12A board.

(2) Open the CR-IR346RU MAINTENANCE UTILITY window and select a relevant RU from the “LIST OF EXISTING RU”.

(3) Restore HISTORY LOG.

MAINTENANCE UTILITY window



CR-IR346RU MAINTENANCE UTILITY

EACH RU SETTING

CONNECTION TEST

RU NAME: ru0

RU IP ADDR: 172 16 1 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU->HD->FD or HD->FD): ERROR LOG

RESTORE (FD->HD->RU or FD->HD): HISTORY LOG

ALL RUs SETTING

☐
MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
UNINSTALL
PREVIOUS VERSION
VERSION UP

(2) [Select/Click]

(3) #1 [Select] HISTORY LOG

(3) #2 [Click]

CR-IR346RU MAINTENANCE UTILITY

History data will be loaded from the FD to Reader Unit. Insert the FD.

(3) #3 [Click]

CR-IR346RU MAINTENANCE UTILITY

Completed

(3) #4 [Click]

FR6H4975.EPS

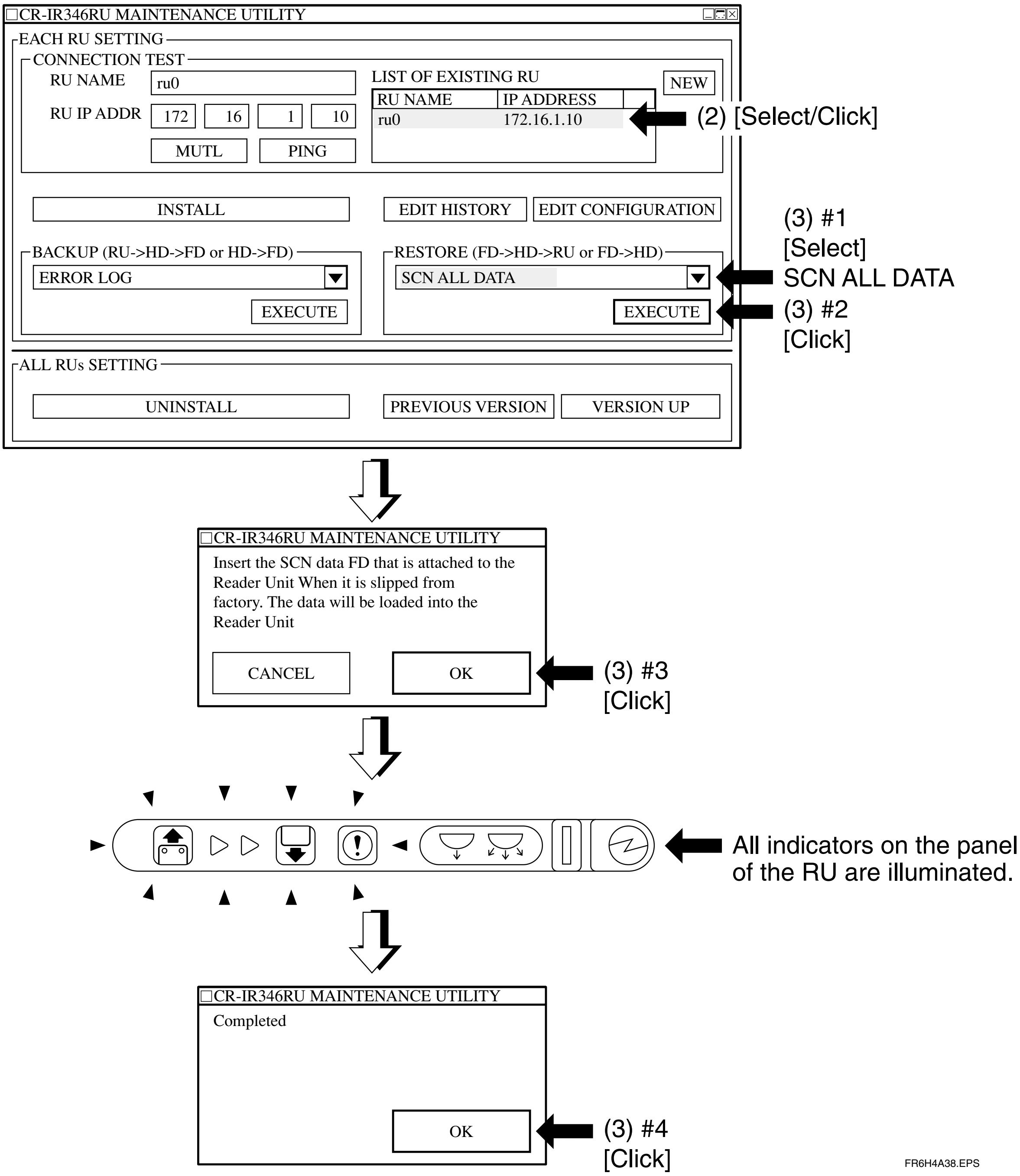
# [9] Restore SCN ALL DATA

(1) Put the machine-specific data floppy disk into the FD drive.

(2) Open the CR-IR346RU MAINTENANCE UTILITY window and select a relevant RU from the “LIST OF EXISTING RU”.

(3) Restore SCN ALL DATA.

MAINTENANCE UTILITY window


CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
RU NAME
RU IP ADDR
MUTL
PING
LIST OF EXISTING RU
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU->HD->FD or HD->FD)
EXECUTE
RESTORE (FD->HD->RU or FD->HD)
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
CANCEL
OK
OK

RU NAME: ru0

RU IP ADDR: 172 16 1 10

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP: ERROR LOG

RESTORE: SCN ALL DATA

(2) [Select/Click]

(3) #1 [Select] SCN ALL DATA

(3) #2 [Click]

CR-IR346RU MAINTENANCE UTILITY

Insert the SCN data FD that is attached to the Reader Unit When it is slipped from factory. The data will be loaded into the Reader Unit

(3) #3 [Click]

All indicators on the panel of the RU are illuminated.

CR-IR346RU MAINTENANCE UTILITY

Completed

(3) #4 [Click]

FR6H4A38.EPS

(4) Click on ☐☐☒ to quit the PC-MUTL.

# [10] Image Checks

(1) Start the CL software.

Click on Start and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

(2) Output the image exposed at 1 mR.

◆ ***CHECKS*** ◆

---

- *There should be no offensive noise or odor.*
- *There should be no IP jam.*
- *The IP should be free from any scratch or damage after reading.*

*If anything abnormal is found, see [Troubleshooting Volume].*

---

(3) Check the output film and image.

◆ ***CHECK*** ◆

---

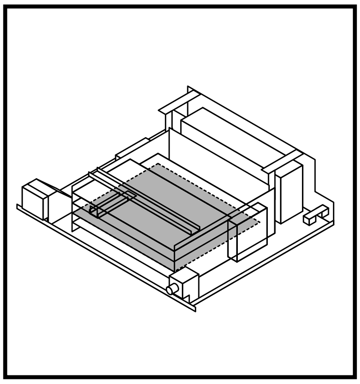
*There should be no unusual nonuniformity.*
*If anything abnormal is found, see [Troubleshooting Volume].*

---

(4) Restore the RU/CL that has been disconnected from the network to its connected state (i.e., power it ON or connect its I/F cable).

*BLANK PAGE*

## 11.3 SCN12A Board



FR6H4A52.EPS

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

### ■ Removal Procedures

(1) Remove the covers.

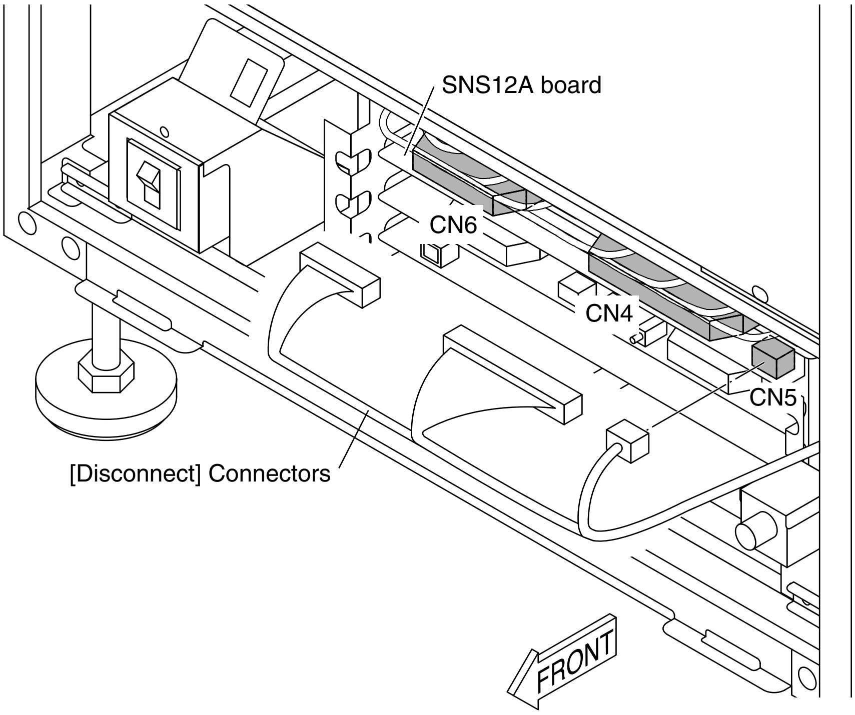
- Front cover
- Lower light protect plate

☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the support plate (board retainer).

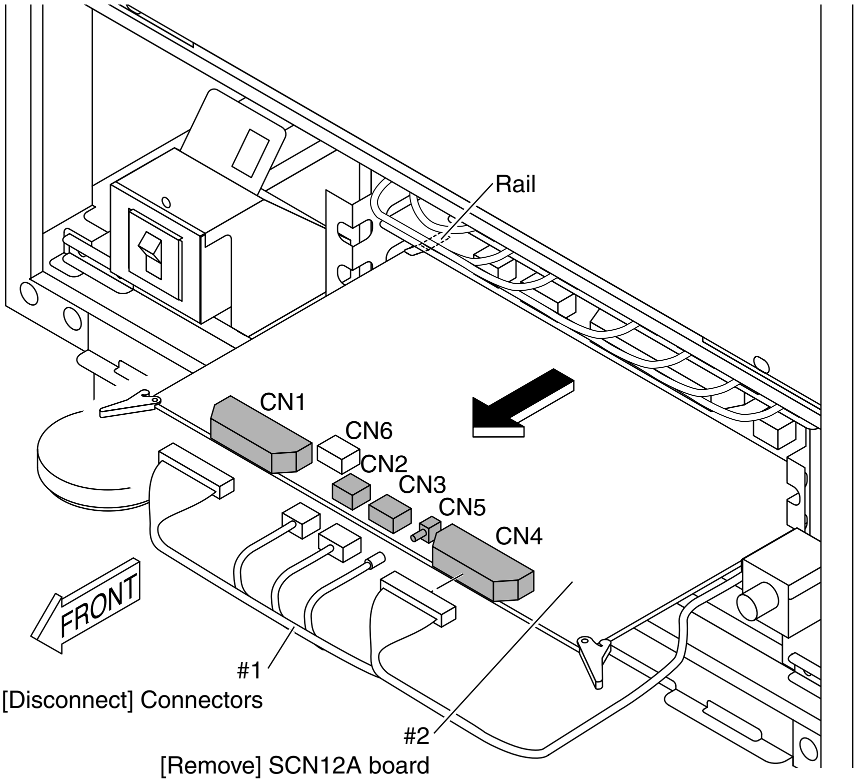
☞ "11.1 Controller"

(3) Disconnect the SNS12A board connectors.



FR6H4A05.EPS

(4) Remove the SCN12A board.


Rail
CN1
CN6
CN2
CN3
CN5
CN4
FRONT
#1
[Disconnect] Connectors
#2
[Remove] SCN12A board

FR6H4A07.EPS

## ■ Reinstallation Procedures

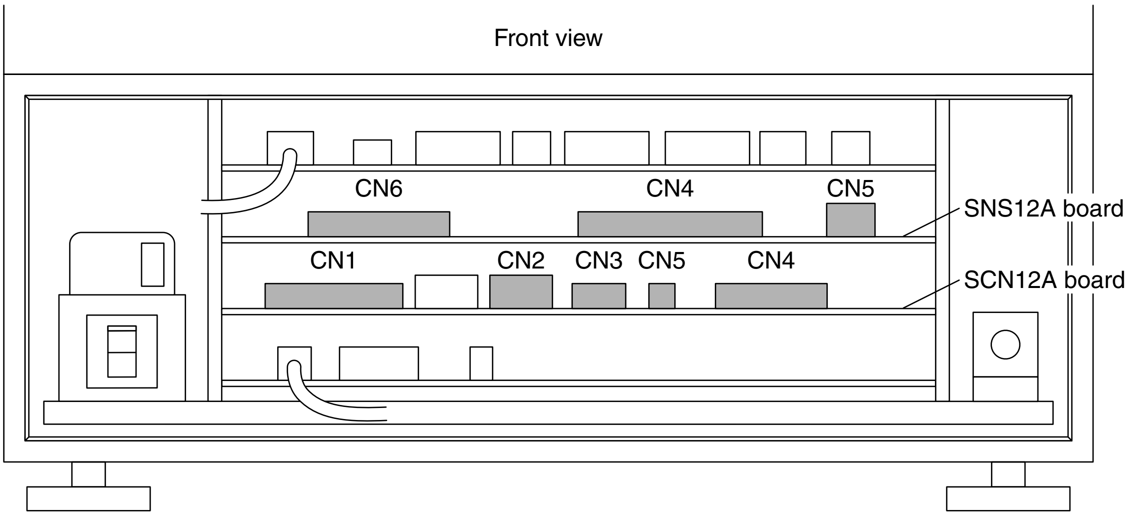
**◆*NOTE*◆**

*When installing the SCN12A board, mount it along the rail.*

For reinstallation, reverse the removal steps.

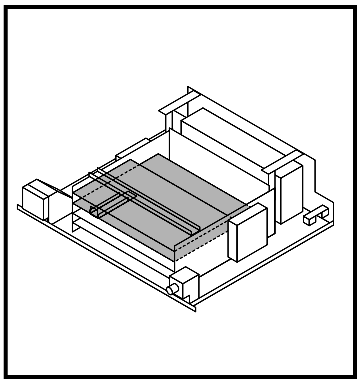
## ■ Check/Adjustment Procedure

- Make sure that the connectors are connected to their correct locations.


Front view
CN6
CN4
CN5
SNS12A board
CN1
CN2
CN3
CN5
CN4
SCN12A board

FR6H4A35.EPS

# 11.4 DRV12A-1 Board



FR6H4A53.EPS

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

**◇ REFERENCE ◇**

*The SNS12A board and DRV12A board are screwed together, and installed as the DRV12A-1 board to the machine.*

## ■ Removal Procedure

(1) Remove the covers.

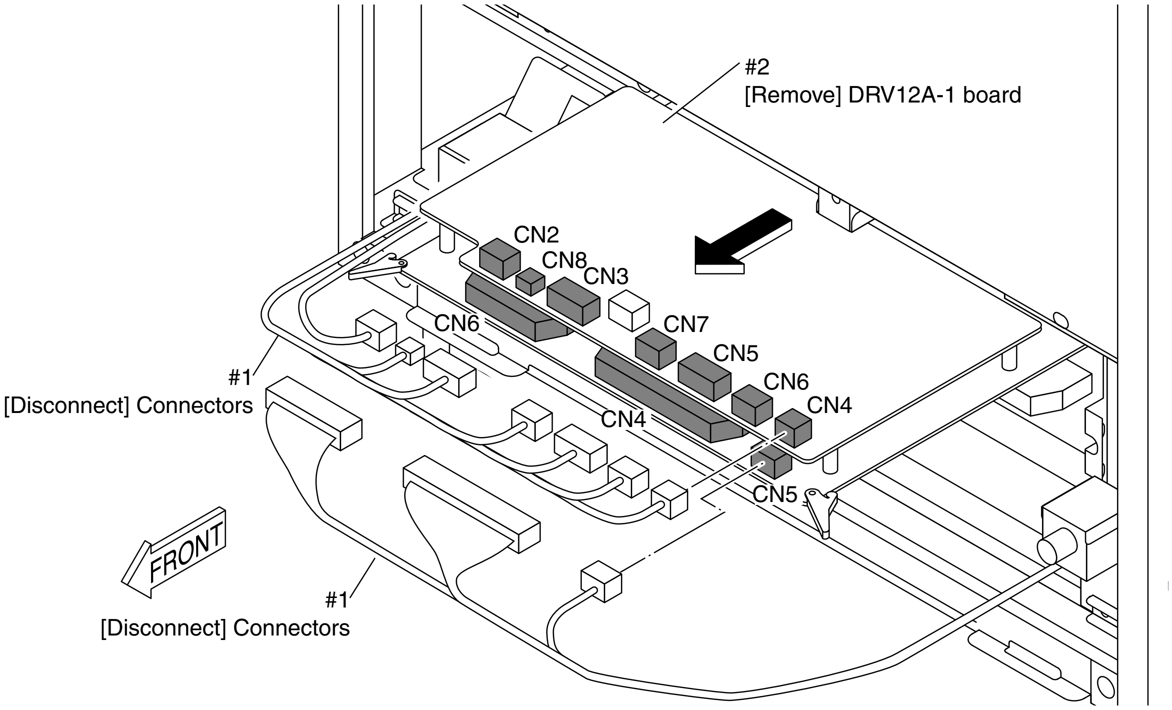
- Front cover
- Lower light protect plate

☞ "3.1 Removing and Reinstalling the Covers"

(2) Remove the support plate (board retainer).

☞ "11.1 Controller"

(3) Remove the DRV12A-1 board.


#2
[Remove] DRV12A-1 board
CN2
CN8
CN3
CN6
CN7
CN5
CN6
CN4
CN4
CN5
#1
[Disconnect] Connectors
FRONT
#1
[Disconnect] Connectors

FR6H4A09.EPS

## ■ Reinstallation Procedures

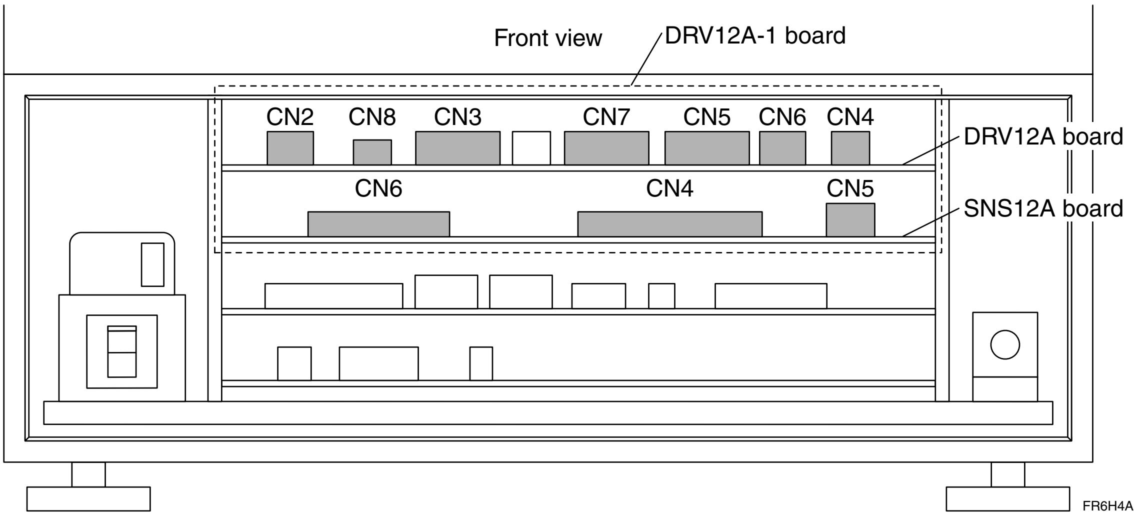
**◆ *NOTE* ◆**

*When installing the DRV12A-1 board, mount it along the rail.*

For reinstallation, reverse the removal steps.

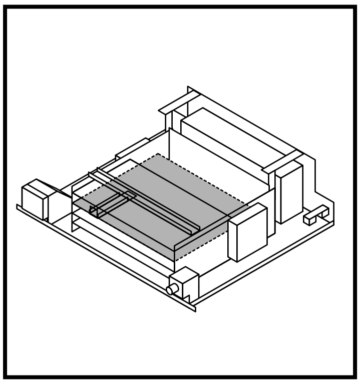
## ■ Check/Adjustment Procedures

- Make sure that the connectors are connected to their correct locations.


Front view
DRV12A-1 board
CN2
CN8
CN3
CN7
CN5
CN6
CN4
DRV12A board
CN6
CN4
CN5
SNS12A board

FR6H4A36.EPS

## 11.5 SNS12A Board



FR6H4A54.EPS

**CAUTION**

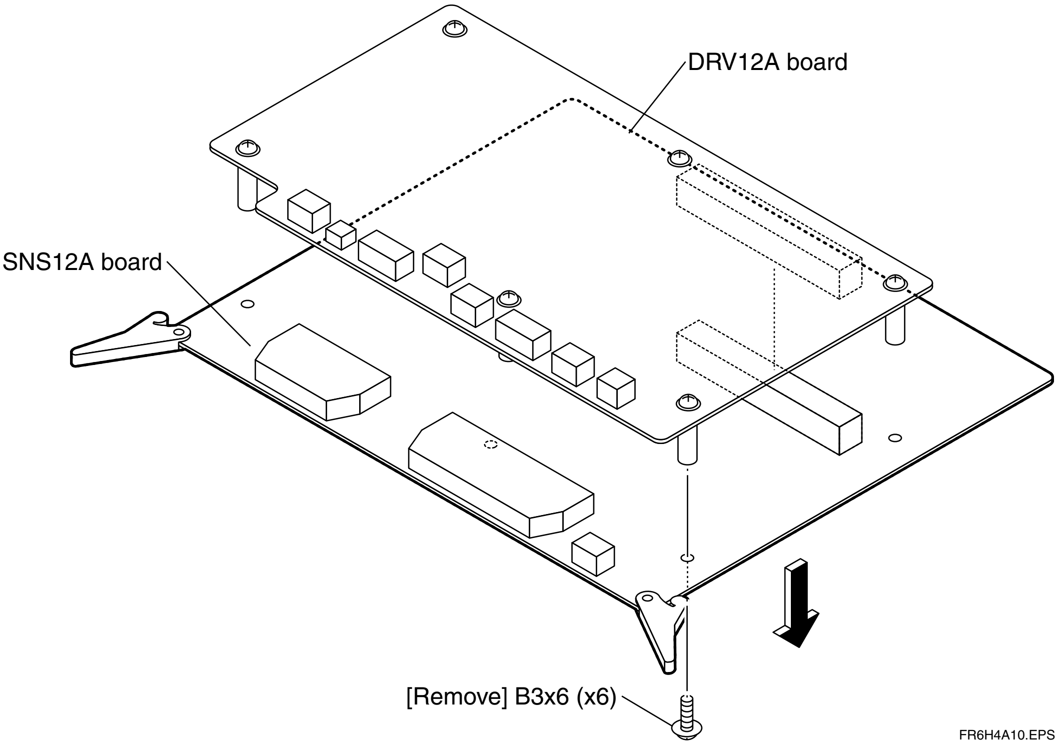
*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

### ■ Removal Procedures

(1) Remove the DRV12A-1 board.

☞ "11.4 DRV12A-1 Board"

(2) Remove the SNS12A board.

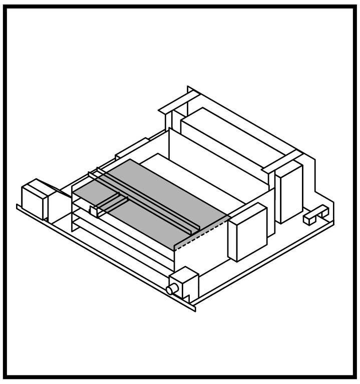


FR6H4A10.EPS

### ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 11.6 DRV12A Board



FR6H4A55.EPS

**CAUTION**

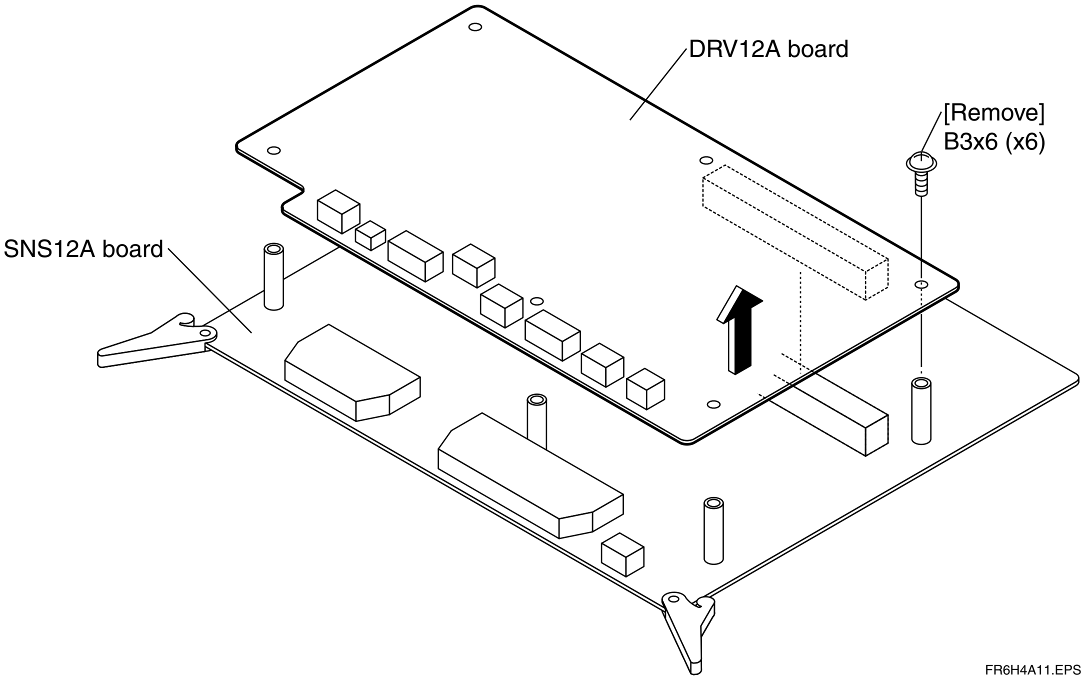
*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

### ■ Removal Procedures

(1) Remove the DRV12A-1 board.

☞ "11.4 DRV12A-1 Board"

(2) Remove the DRV12A board.

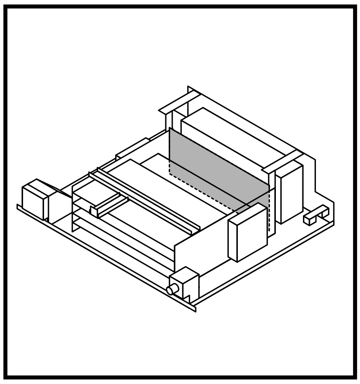


FR6H4A11.EPS

### ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 11.7 MTH12A Board



FR6H4A57.EPS

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

## ■ Removal Procedures

(1) Remove the controller.

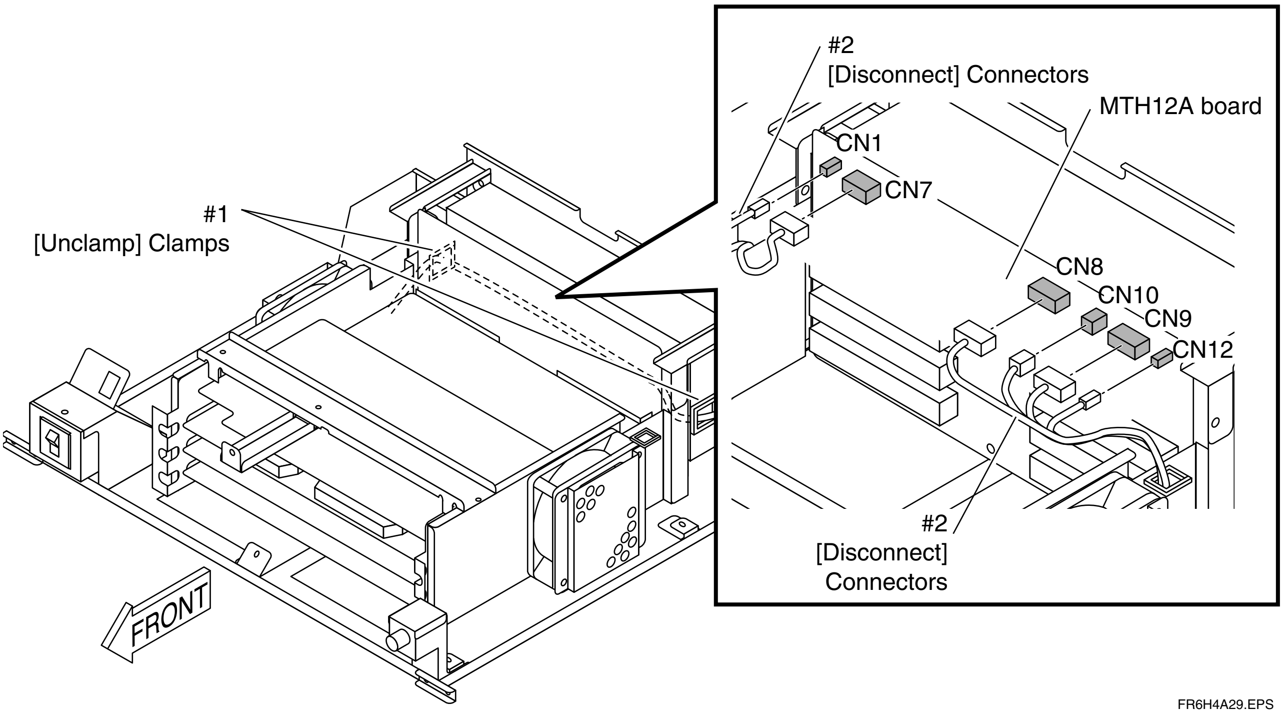
☞ "11.1 Controller"

(2) Remove the boards.

- CPU12A board
- SCN12A board
- DRV12A-1 board

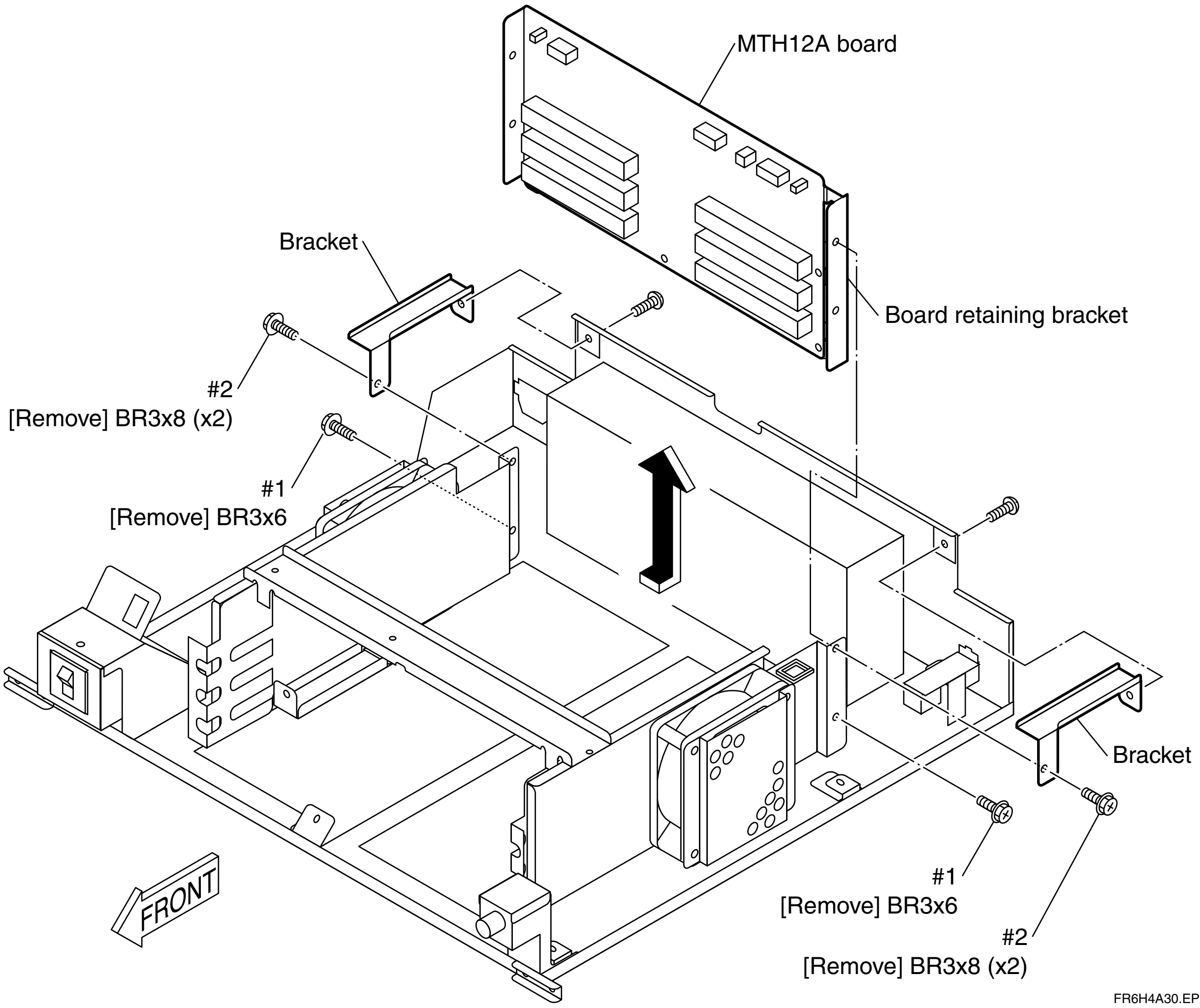
☞ "11.2 CPU12A Board", "11.3 SCN12A Board", "11.4 DRV12A-1 Board"

(3) Disconnect the connectors.

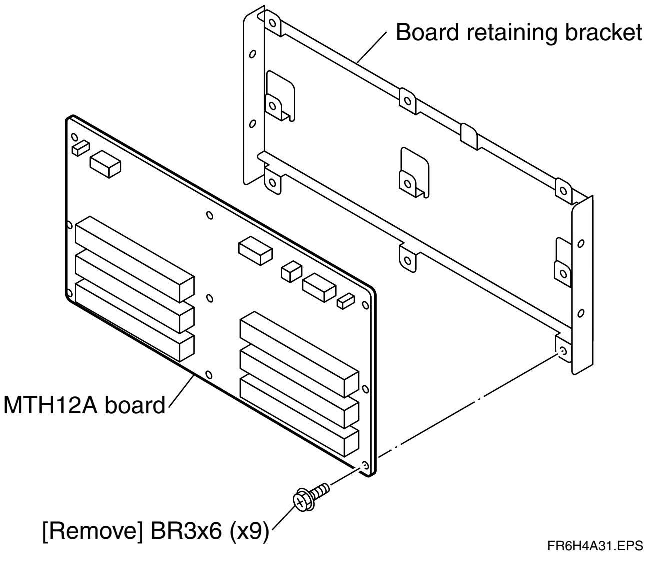

#1
[Unclamp] Clamps
FRONT
#2
[Disconnect] Connectors
MTH12A board
CN1
CN7
CN8
CN10
CN9
CN12
#2
[Disconnect]
Connectors

FR6H4A29.EPS

(4) Remove the MTH12A board together with the board retaining bracket.


MTH12A board
Bracket
Board retaining bracket
#2
[Remove] BR3x8 (x2)
#1
[Remove] BR3x6
FRONT
Bracket
#1
[Remove] BR3x6
#2
[Remove] BR3x8 (x2)
FR6H4A30.EPS

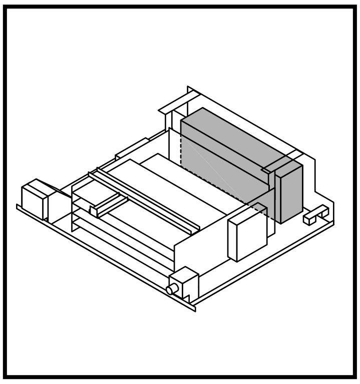
(5) Remove the MTH12A board.


Board retaining bracket
MTH12A board
[Remove] BR3x6 (x9)
FR6H4A31.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 11.8 Power Supply



FR6H4A58.EPS

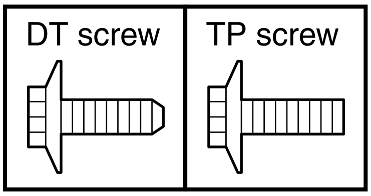
## ■ Removal Procedures

(1) Remove the controller.

☞ “11.1 Controller”

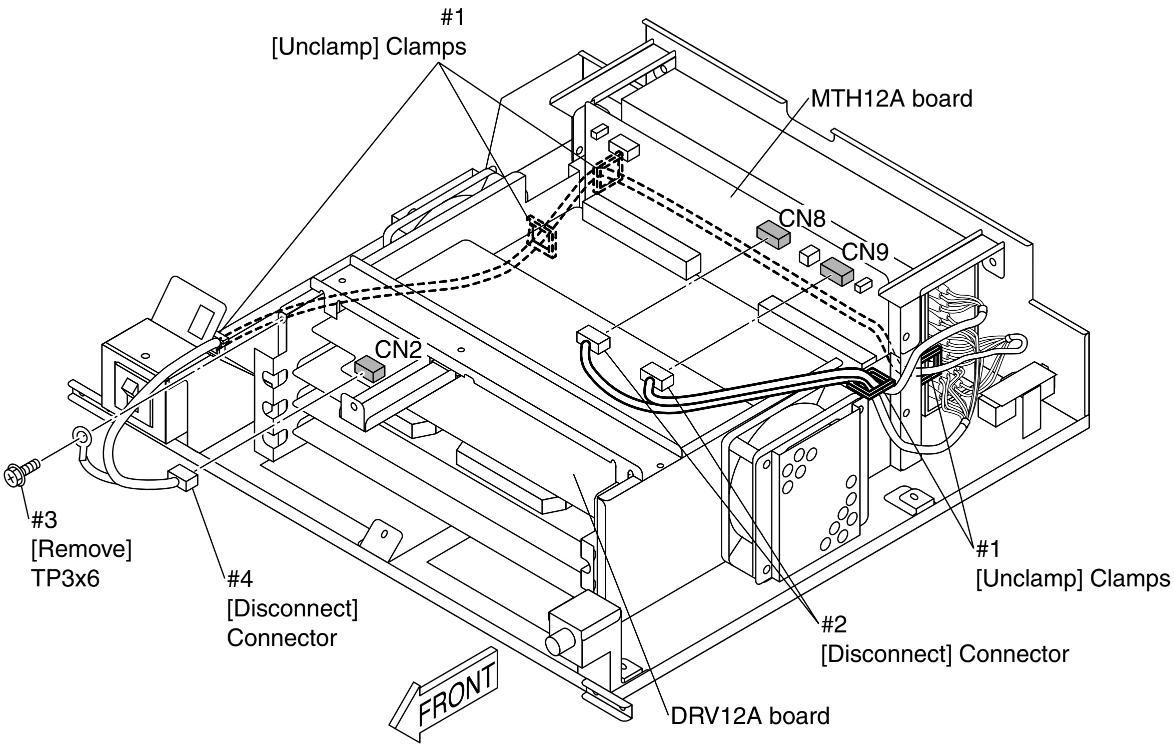
***◆ NOTE ◆***

*The TP screw used to secure the ground wire is similar in shape to a DT screw. When attaching the screw, check its shape to avoid confusing it with a wrong one.*


DT screw
TP screw

FR6H4105.EPS

(2) Disconnect the connectors.


#1
[Unclamp] Clamps
MTH12A board
CN8
CN9
CN2
#3
[Remove]
TP3x6
#4
[Disconnect]
Connector
FRONT
DRV12A board
#1
[Unclamp] Clamps
#2
[Disconnect] Connector

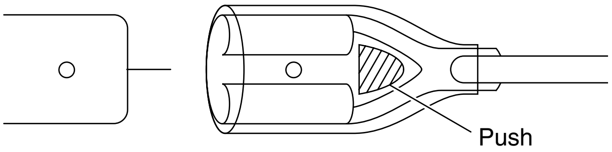
FR6H4A15.EPS

**CAUTION**

*The cable connected to the power supply (marked by CAUTION in the illustration below) should not be detached.*

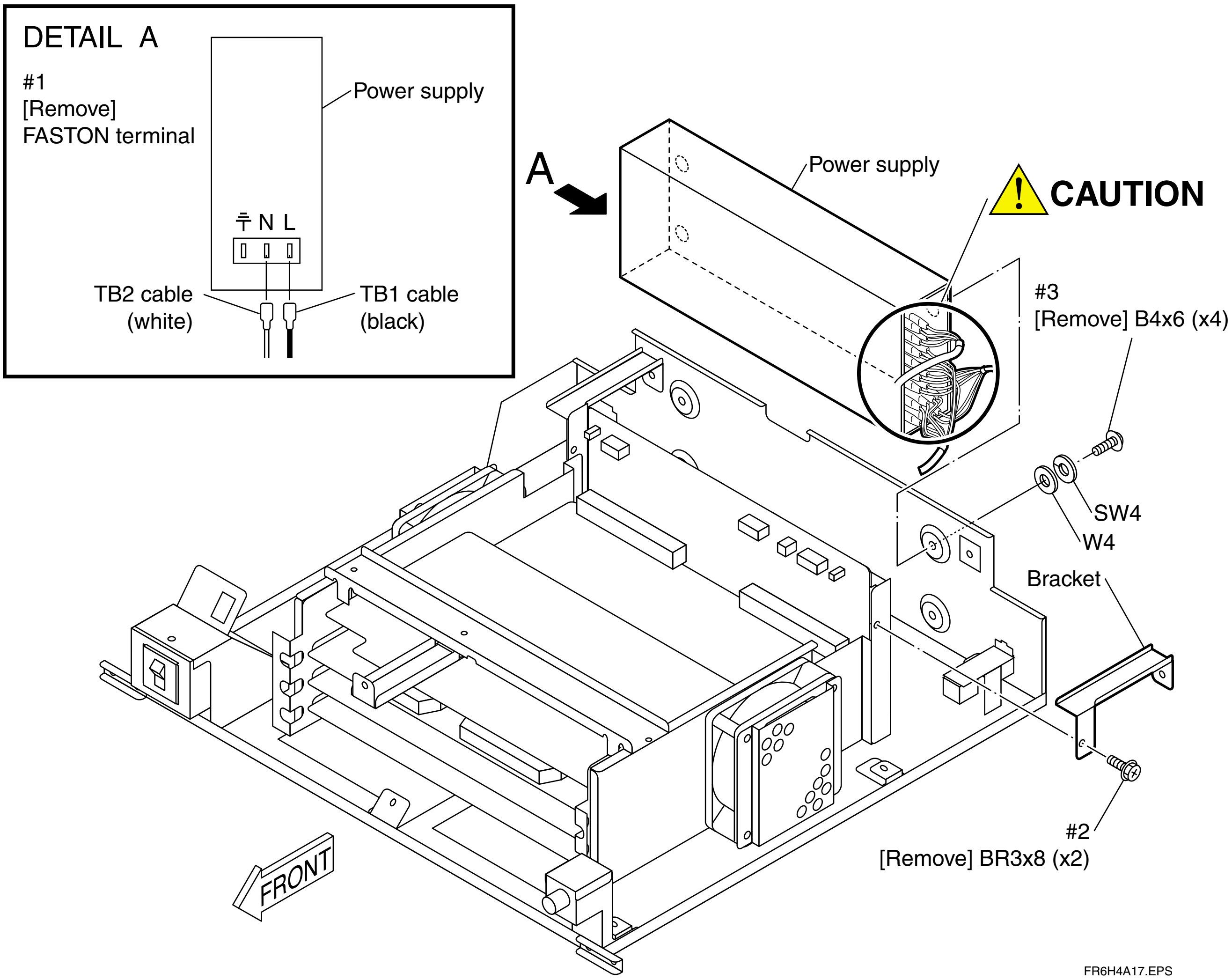
**◆ NOTE ◆**

*To remove the FASTON terminal, push the shaded portion of the terminal illustrated below to detach it.*



FR6H0001.EPS

(3) Remove the power supply.


DETAIL A
#1
[Remove]
FASTON terminal
Power supply
N L
TB2 cable
(white)
TB1 cable
(black)
A
Power supply
CAUTION
#3
[Remove] B4x6 (x4)
SW4
W4
Bracket
#2
[Remove] BR3x8 (x2)
FRONT

FR6H4A17.EPS

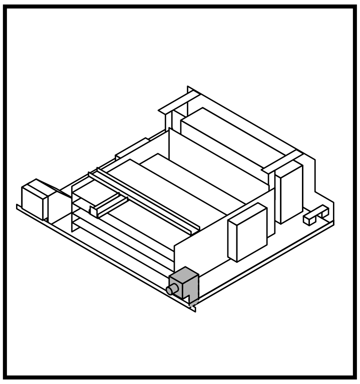
## ■ Reinstallation Procedures

**◆ INSTRUCTION ◆**

*Connect the FASTON terminal to its correct location.*

For reinstallation, reverse the removal steps.

# 11.9 Reset Switch



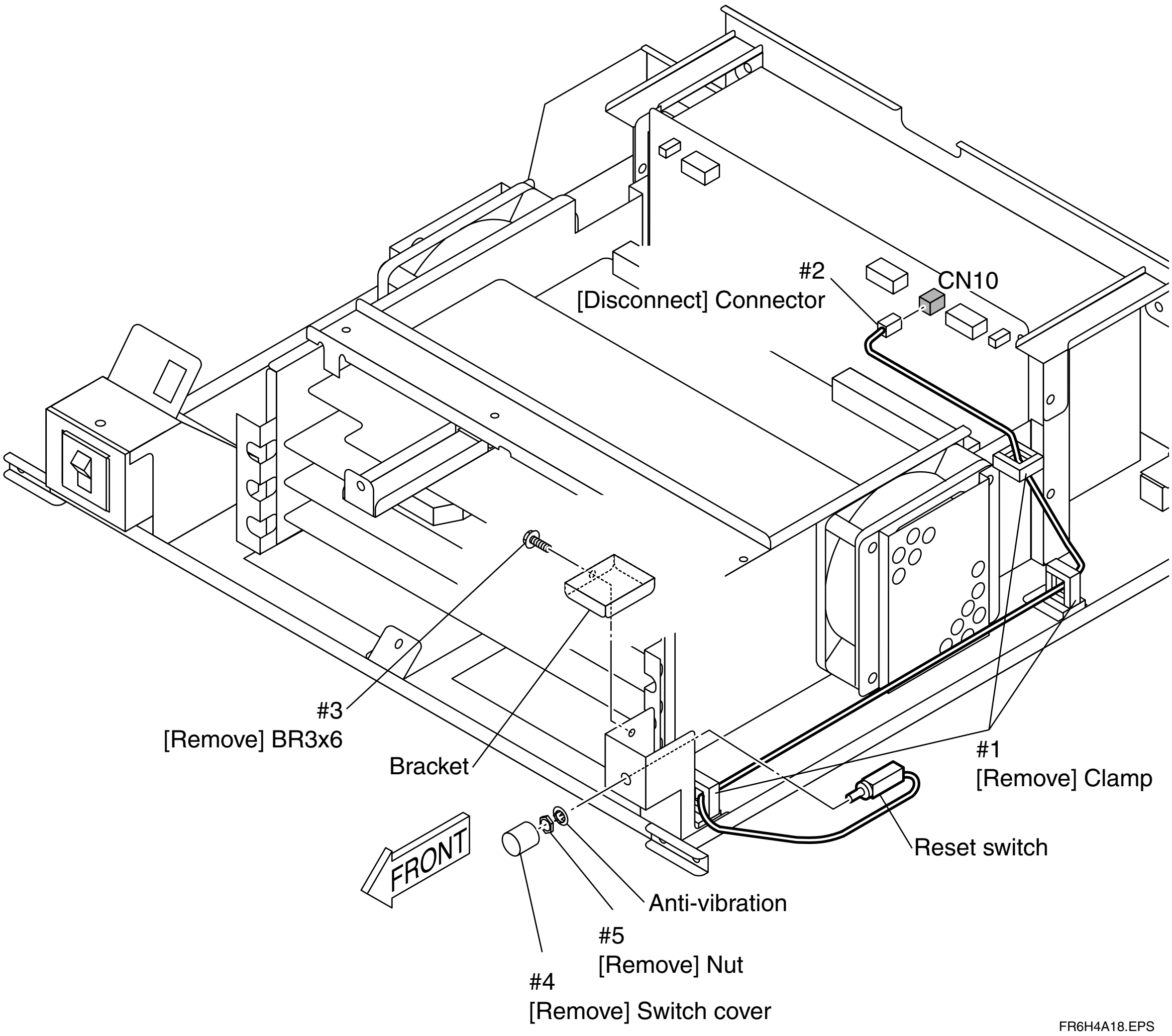
FR6H4A59.EPS

## ■ Removal Procedures

(1) Remove the controller.

☞ “11.1 Controller”

(2) Remove the reset switch.

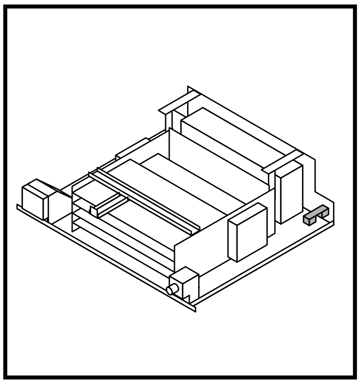

#2
[Disconnect] Connector
CN10
#3
[Remove] BR3x6
Bracket
#1
[Remove] Clamp
Reset switch
FRONT
Anti-vibration
#5
[Remove] Nut
#4
[Remove] Switch cover

FR6H4A18.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 11.10 CNN12A Board



FR6H4A60.EPS

**CAUTION**

*When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*

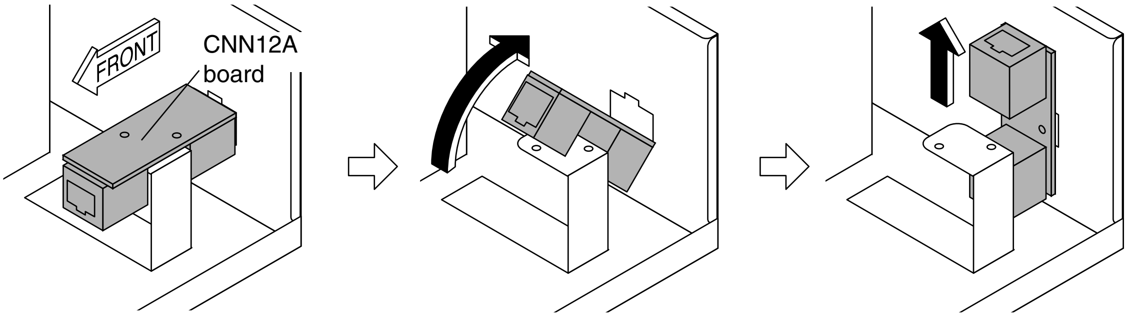
## ■ Removal Procedures

(1) Remove the controller.

☞ “11.1 Controller”

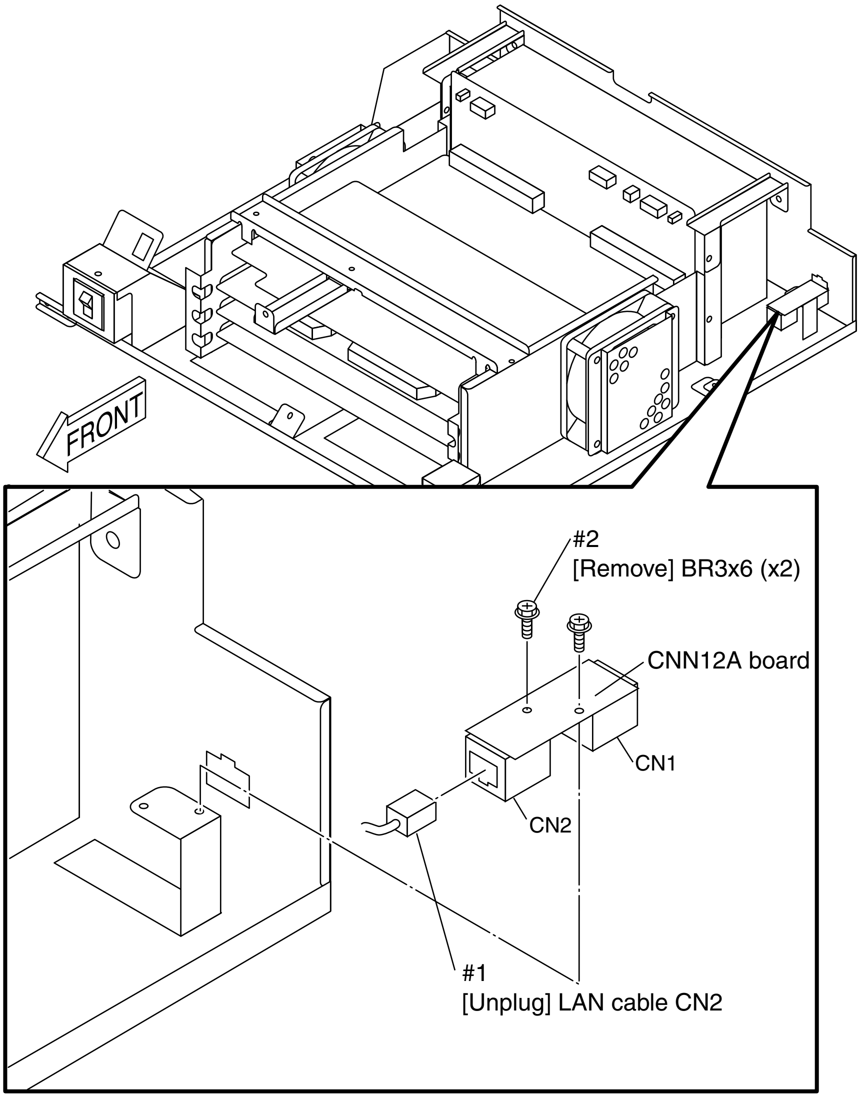
**◆ *NOTE* ◆**

*To remove the CNN12A board, take the following steps in the illustration below.*



FR6H4A19.EPS

(2) Remove the CNN12A board.

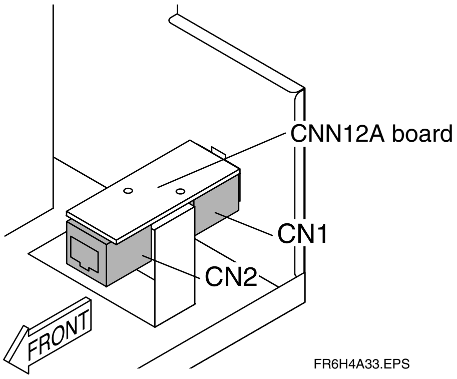

FRONT
#2
[Remove] BR3x6 (x2)
CNN12A board
CN1
CN2
#1
[Unplug] LAN cable CN2

FR6H4A20.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*The CNN12A board should be installed in the orientation as illustrated below.*

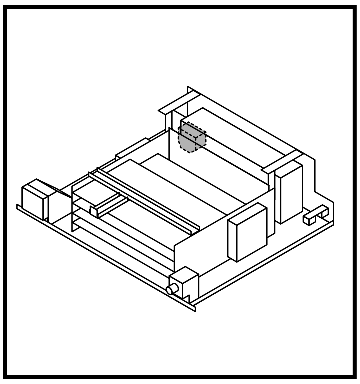

CNN12A board
CN1
CN2
FRONT

FR6H4A33.EPS

---

For reinstallation, reverse the removal steps.

## 11.11 Power Supply Socket



FR6H4A61.EPS

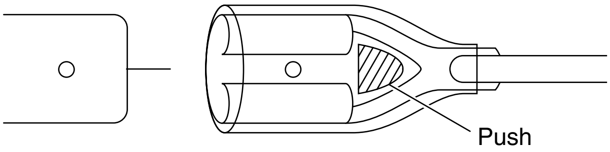
### ■ Removal Procedures

(1) Remove the controller.

☞ "11.1 Controller"

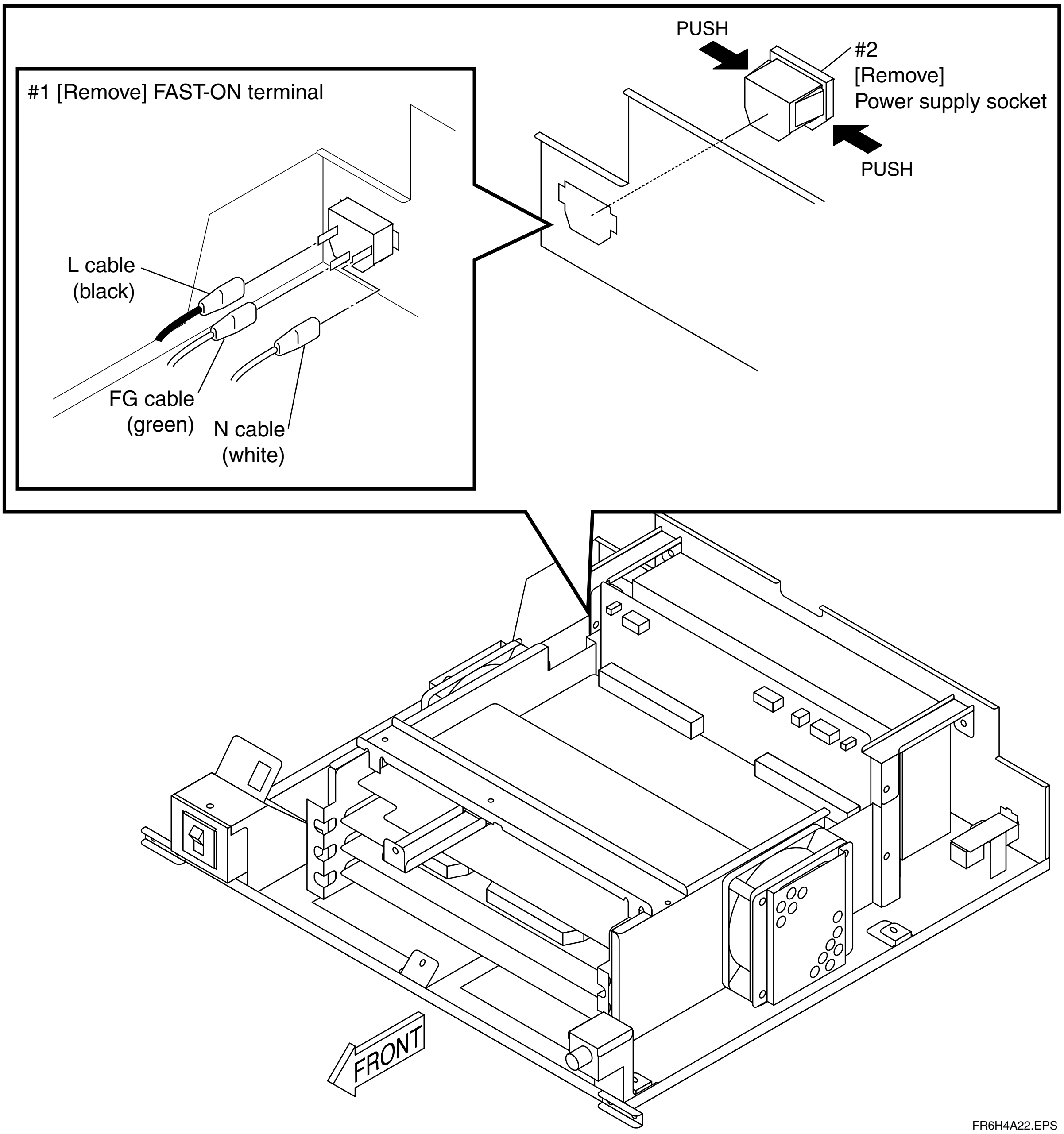
**◆ *NOTE* ◆**

*To remove the FASTON terminal, push the shaded portion of the terminal illustrated below to detach it.*



FR6H0001.EPS

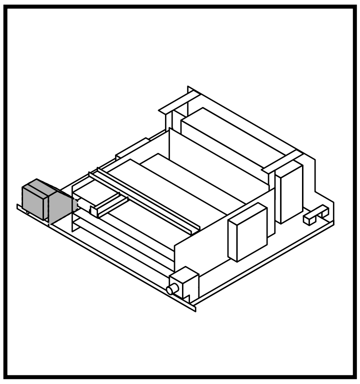
(2) Remove the power supply socket.


PUSH
#2
[Remove]
Power supply socket
PUSH
#1 [Remove] FAST-ON terminal
L cable
(black)
FG cable
(green)
N cable
(white)
FRONT
FR6H4A22.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 11.12 Breaker



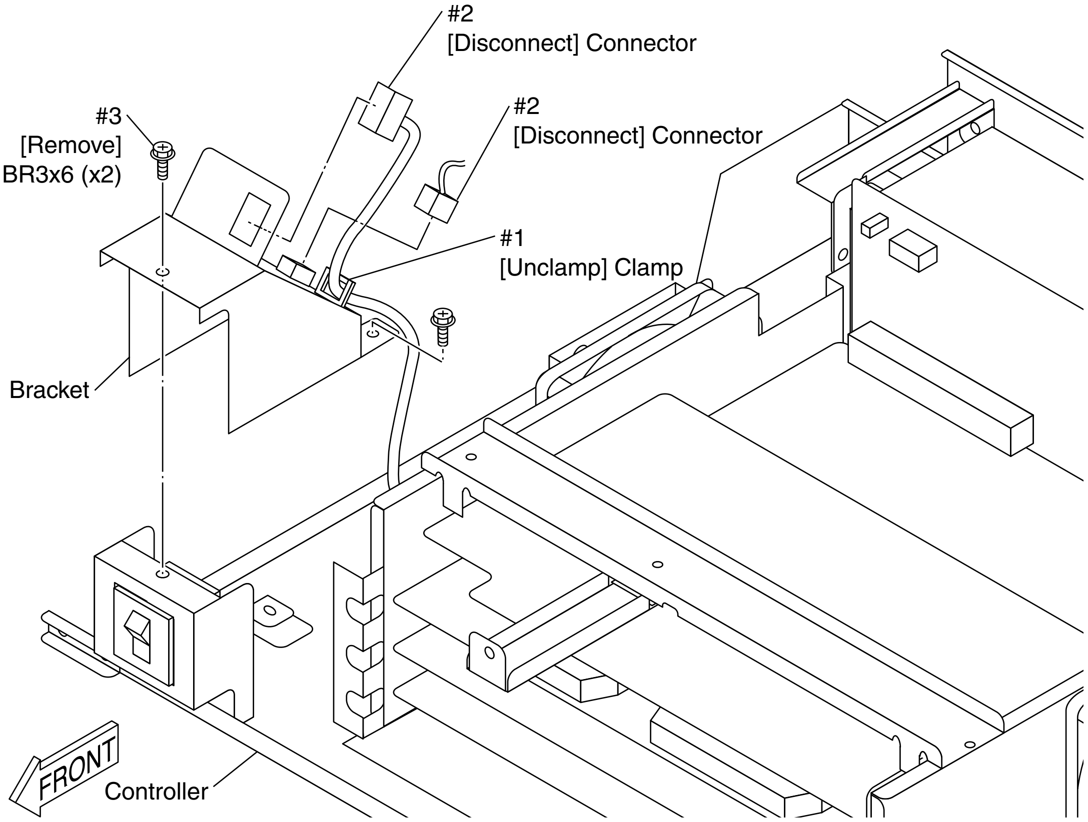
FR6H4A62.EPS

## ■ Removal Procedures

(1) Remove the controller.

☞ "11.1 Controller

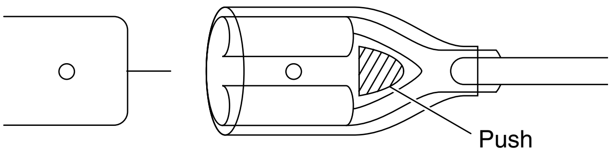
(2) Remove the bracket.


#2
[Disconnect] Connector
#2
[Disconnect] Connector
#3
[Remove]
BR3x6 (x2)
#1
[Unclamp] Clamp
Bracket
FRONT
Controller

FR6H4A23.EPS

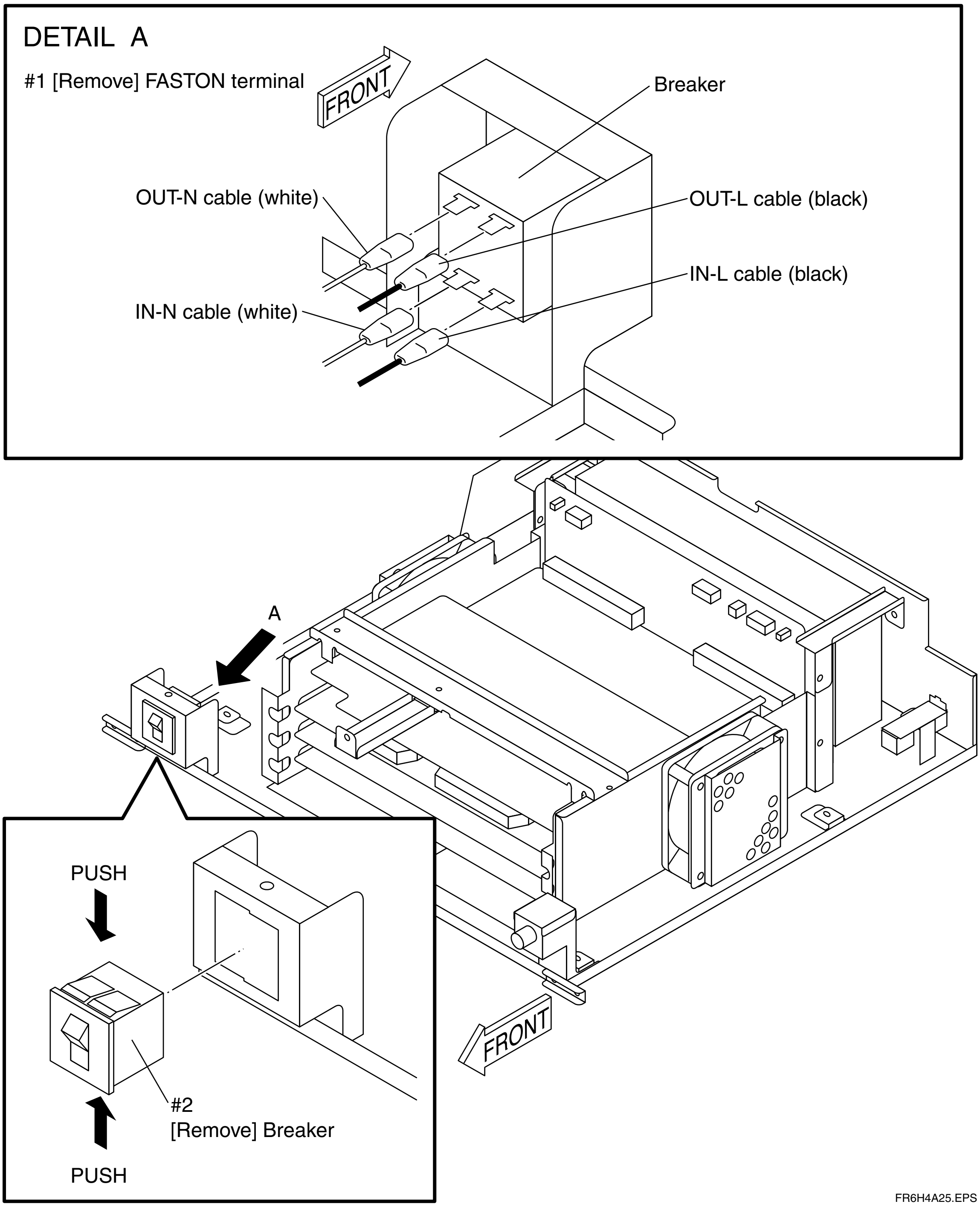
**◆ NOTE ◆**

*To remove the FASTON terminal, push the shaded portion of the terminal illustrated below to detach it.*



FR6H0001.EPS

(3) Remove the breaker.

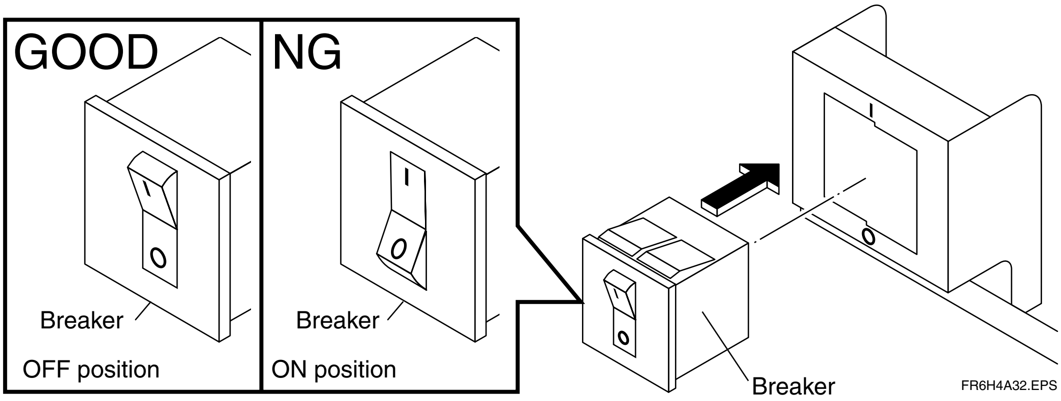

DETAIL A
#1 [Remove] FASTON terminal
FRONT
Breaker
OUT-N cable (white)
OUT-L cable (black)
IN-L cable (black)
IN-N cable (white)
A
PUSH
#2
[Remove] Breaker
PUSH
FRONT

FR6H4A25.EPS

## ■ Reinstallation Procedures

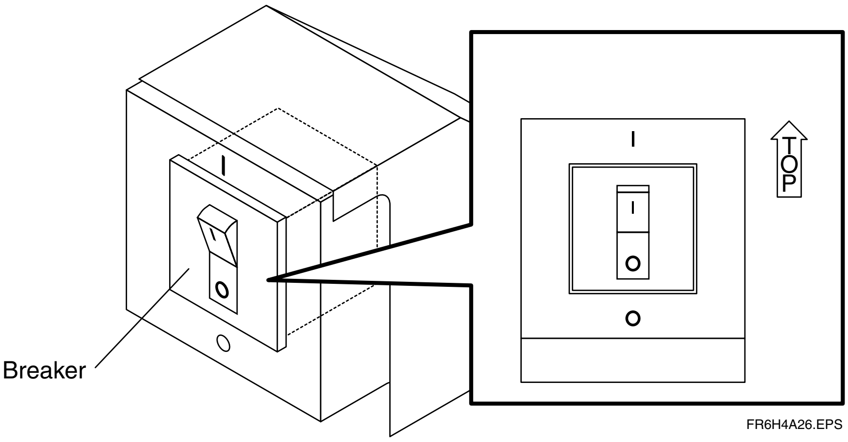
**WARNING**

*Before installing the breaker, put the breaker switch in the OFF position.*


GOOD
NG
Breaker
OFF position
Breaker
ON position
Breaker
FR6H4A32.EPS

**CAUTION**

*The breaker should be mounted in its correct orientation.*


I
O
TOP
Breaker
FR6H4A26.EPS

For reinstallation, reverse the removal steps.

## ■ Check/Adjustment Procedures

- Make sure that the breaker is installed in its OFF position.
- Make sure that the breaker is mounted in its correct orientation.

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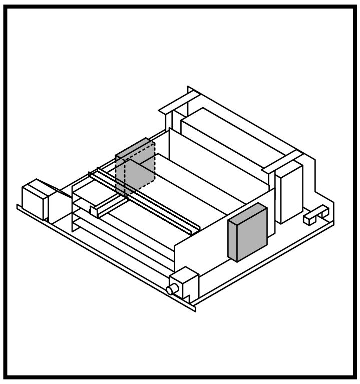
# 11.13 Fans (FAN1 and FAN2)



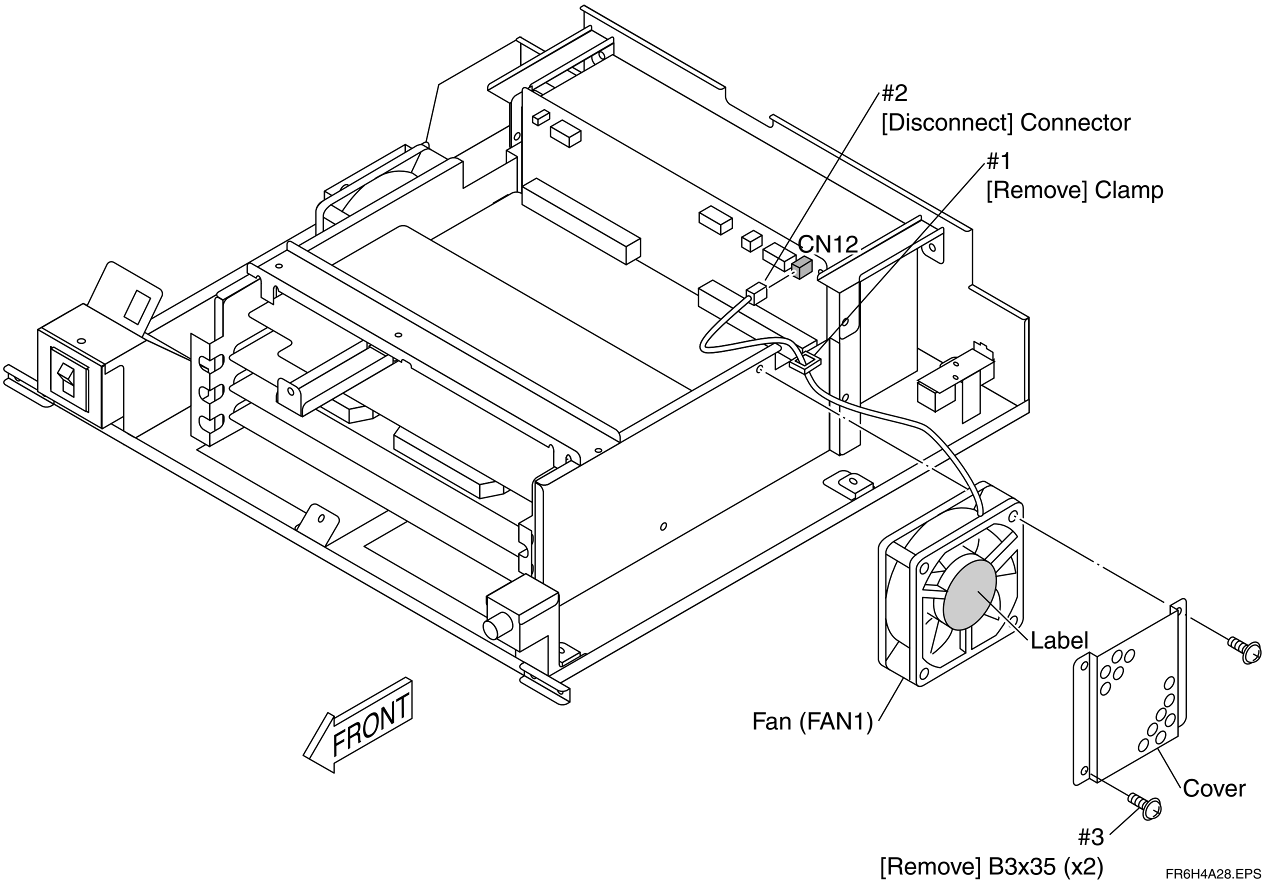
FR6H4A63.EPS

## ■ Removal Procedures

(1) Remove the controller.

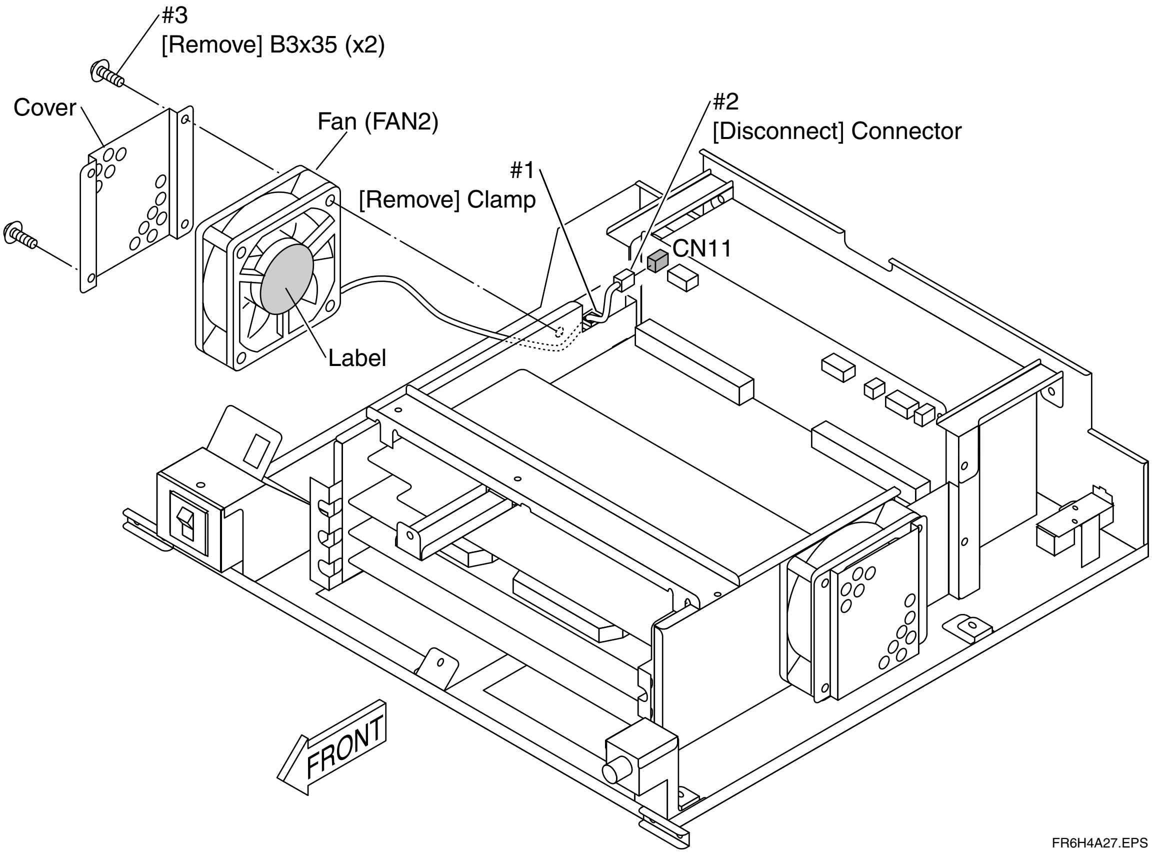
☞ “11.1 Controller”

(2) Remove the fan (FAN1).


#2
[Disconnect] Connector
#1
[Remove] Clamp
CN12
Label
Fan (FAN1)
Cover
#3
[Remove] B3x35 (x2)
FRONT

FR6H4A28.EPS

(3) Remove the fan (FAN2).


#3
[Remove] B3x35 (x2)
Cover
Fan (FAN2)
#2
[Disconnect] Connector
#1
[Remove] Clamp
CN11
Label
FRONT
FR6H4A27.EPS

## ■ Reinstallation Procedures

### ◆ *INSTRUCTION* ◆

*When installing the fan, orient its label as shown in the illustration.*

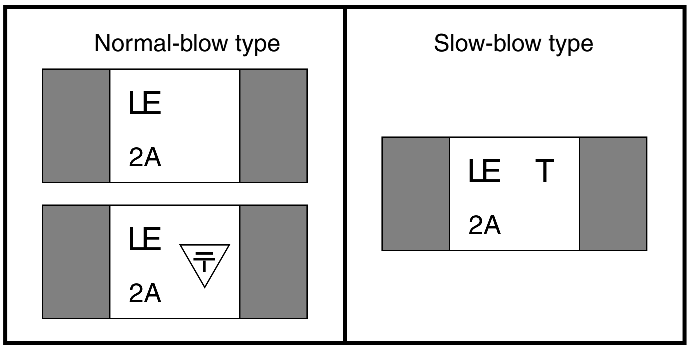
For installation, reverse the removal steps.

# 12. Replacing the Fuses and Fuse Locations

### ◆ INSTRUCTION ◆

*There are two fuse types: normal-blow type and slow-blow type*
*The slow-blow type fuse has a mark "T" silk-screened on it.*
*When replacing the fuse, check its type.*

- Example of silk-screened marks

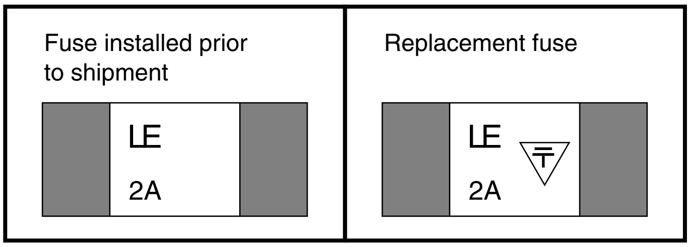

Normal-blow type
LE
2A
LE
T
2A
Slow-blow type
LE T
2A

FR6H4C13.EPS

### ◇ REFERENCE ◇

*The fuse (1A-5A) installed prior to shipment and a new replacement fuse (1A-5A) may have different silk-screened marks.*

- Example of silk-screened marks


Fuse installed prior to shipment
LE
2A
Replacement fuse
LE
T
2A

FR6H4C14.EPS

## ■ List of Fuses

| Board | Code No. | Type | Rating (A) | Fuse number ✼ |
|---|---|---|---|---|
| MTH12A | 137S2097 | Slow blow (T) | 5 | A11, A21, A31, A41, H11, J11 |
| | 137S2096 | Slow blow (T) | 4 | B11, B21, C11 |
| | 137S2094 | Slow blow (T) | 3 | C21, C31 |
| | 137S2092 | Slow blow (T) | 2 | K11 |
| SCN12A | 137S2084 | Slow blow (T) | 1.5 | A22, H12, H13, H14, J12 |
| SNS12A | 137S2084 | Slow blow (T) | 1.5 | A32, A33 |
| | 137S2083 | Slow blow (T) | 1 | A34 |
| | 137S1219 | Normal blow | 500 m | A35 |
| DRV12A | 137S2094 | Slow blow (T) | 3 | D11, D21, D41, D51, E11, E21, E31, E51, L31 |
| | 137S2092 | Slow blow (T) | 2 | L11 |
| | 137S1220 | Normal blow | 2 | D31, E41, L21 |

✼ Fuse number: Number indicated in the fuse block diagram.

Tbl_MC213_LB.EPS

## ■ Fuse Replacement Procedures

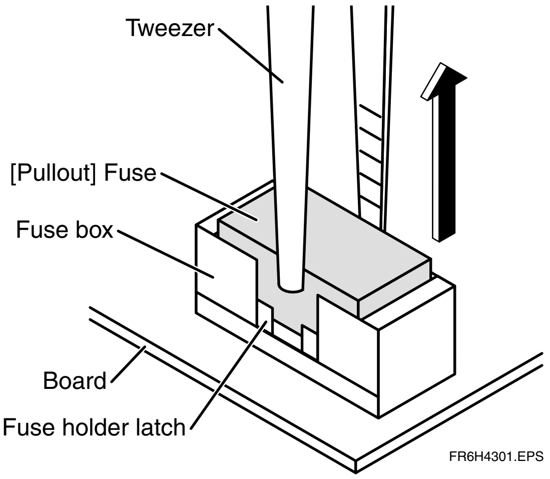
### CAUTIONS

- *When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electronic parts on the board.*
- *When replacing the fuse, check the type and rating (A) of the fuse to be replaced, and replace it with a fuse of the same type.*
  *At the same time, check the rating (A) silk-screened on the board as well.*
- *To replace the fuse, use tweezers and exercise care not to damage the rib of the fuse holder.*

(1) Remove the board.

☞ “11. Removing and Reinstalling the Controller”

(2) Pull out the fuse and replace it with a new one.



# 12.1 MTH12A Board Fuses

## ■ Removal Procedures

(1) Remove the MTH12A board.

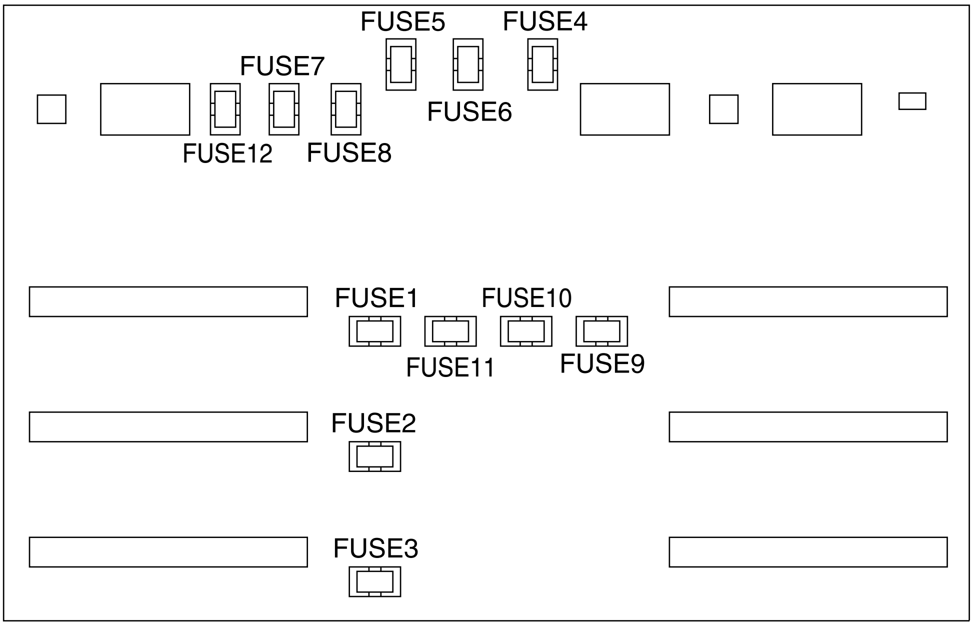
☞ “11.7 MTH12A Board”

(2) Replace the fuse.

☞ “■ Fuse Replacement Procedures”

## ■ Fuse Locations

MTH12A board



FR6H4C03.EPS

## ■ Fuse Information

| Board indications | Type | Rating (A) | Fuse number ✻ |
|---|---|---|---|
| FUSE1 | Slow blow (T) | 5 | A31 |
| FUSE2 | Slow blow (T) | 5 | A21 |
| FUSE3 | Slow blow (T) | 5 | A11 |
| FUSE4 | Slow blow (T) | 5 | A41 |
| FUSE5 | Slow blow (T) | 4 | B11 |
| FUSE6 | Slow blow (T) | 4 | B21 |
| FUSE7 | Slow blow (T) | 4 | C11 |
| FUSE8 | Slow blow (T) | 3 | C21 |
| FUSE9 | Slow blow (T) | 5 | H11 |
| FUSE10 | Slow blow (T) | 5 | J11 |
| FUSE11 | Slow blow (T) | 2 | K11 |
| FUSE12 | Slow blow (T) | 3 | C31 |

✻ Fuse number: Number indicated in the fuse block diagram.

Tbl_MC214_LB.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 12.2 SCN12A Board Fuses

### ■ Removal Procedures

(1) Remove the SCN12A board.

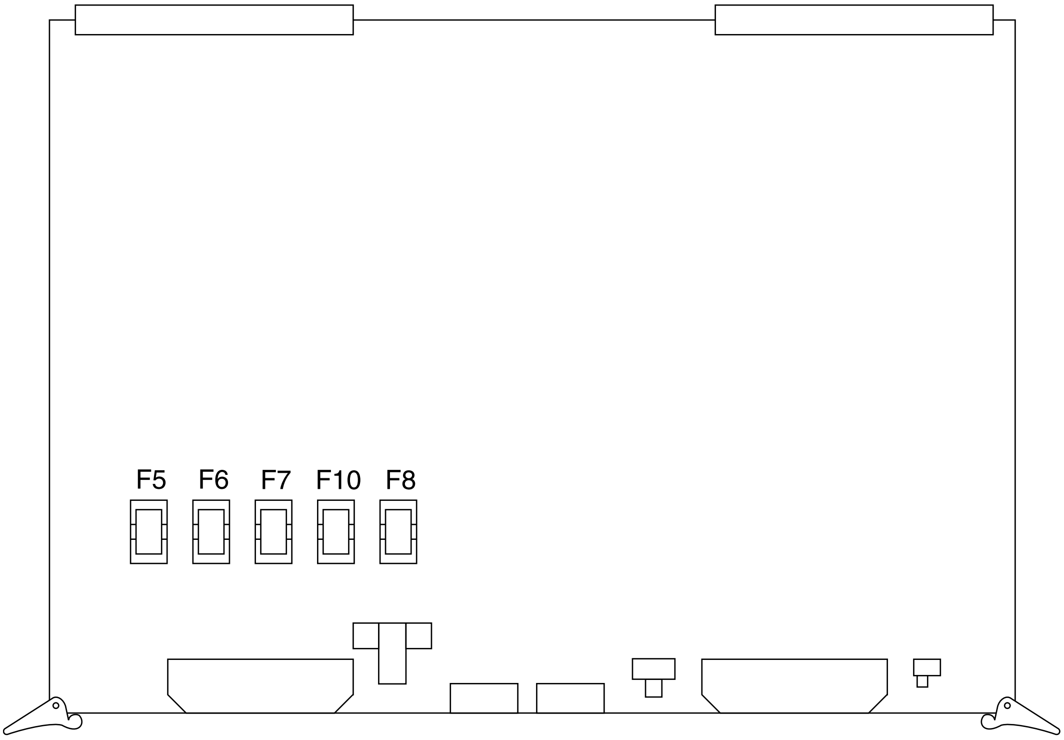
☞ “11.3 SCN12A Board”

(2) Replace the fuse.

☞ “■ Fuse Replacement Procedures”

### ■ Fuse Locations

SCN12A board



FR6H4C02.EPS

### ■ Fuse Information

| Board indications | Type | Rating (A) | Fuse number ✻ |
|---|---|---|---|
| F5 | Slow blow (T) | 1.5 | A22 |
| F6 | Slow blow (T) | 1.5 | H14 |
| F7 | Slow blow (T) | 1.5 | H12 |
| F8 | Slow blow (T) | 1.5 | H13 |
| F10 | Slow blow (T) | 1.5 | J12 |

✻ Fuse number: Number indicated in the fuse block diagram.

Tbl_MC215_LB.EPS

### ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

## 12.3 SNS12A Board Fuses

### ■ Removal Procedures

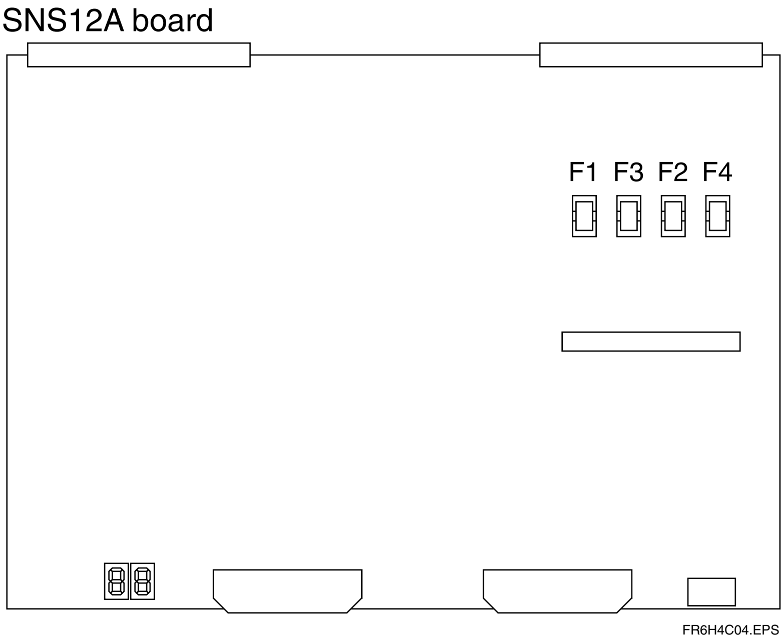
(1) Remove the SNS12A board.

☞ “11.5 SNS12A Board”

(2) Replace the fuse.

☞ “■ Fuse Replacement Procedures”

### ■ Fuse Locations



### ■ Fuse Information

| Board indications | Type | Rating (A) | Fuse number ✻ |
|---|---|---|---|
| F1 | Normal blow | 500 m | A35 |
| F2 | Slow blow (T) | 1.5 | A34 |
| F3 | Slow blow (T) | 1 | A33 |
| F4 | Slow blow (T) | 1.5 | A32 |

✻ Fuse number: Number indicated in the fuse block diagram.

Tbl_MC216_LB.EPS

### ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 12.4 DRV12A Board Fuses

## ■ Removal Procedures

(1) Remove the DRV12A board.

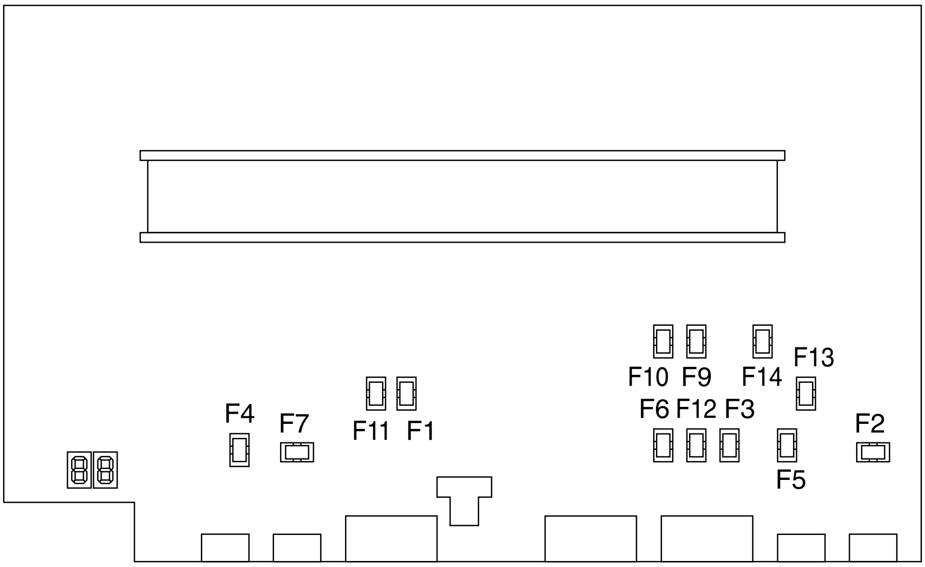
☞ “11.6 DRV12A Board”

(2) Replace the fuse.

☞ “■ Fuse Replacement Procedures”

## ■ Fuse Locations

DRV12A board



FR6H4C05.EPS

## ■ Fuse Information

| Board indications | Type | Rating (A) | Fuse number ✻ |
|---|---|---|---|
| F1 | Slow blow (T) | 3 | D11 |
| F2 | Slow blow (T) | 3 | E21 |
| F3 | Slow blow (T) | 3 | E11 |
| F4 | Slow blow (T) | 3 | D41 |
| F5 | Slow blow (T) | 3 | E31 |
| F6 | Slow blow (T) | 3 | D21 |
| F7 | Slow blow (T) | 2 | L11 |
| F9 | Normal blow | 2 | E41 |
| F10 | Normal blow | 2 | D31 |
| F11 | Slow blow (T) | 3 | D51 |
| F12 | Slow blow (T) | 3 | E51 |
| F13 | Normal blow | 2 | L21 |
| F14 | Slow blow (T) | 3 | L31 |

✻ Fuse number: Number indicated in the fuse block diagram.

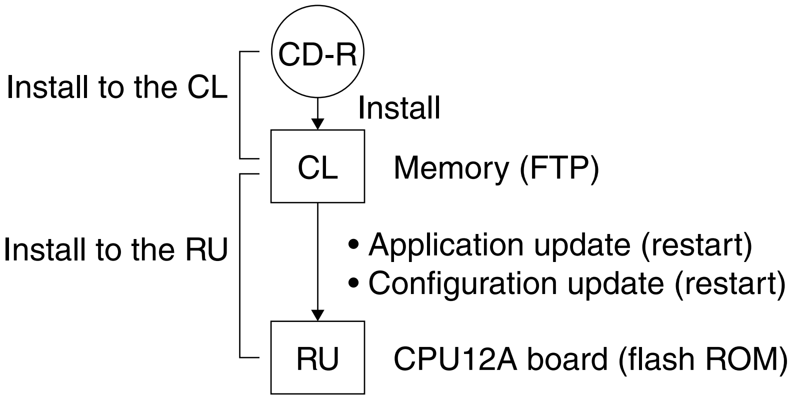
Tbl_MC217_LB.EPS

## ■ Reinstallation Procedures

For reinstallation, reverse the removal steps.

# 13. Version Updating Procedures

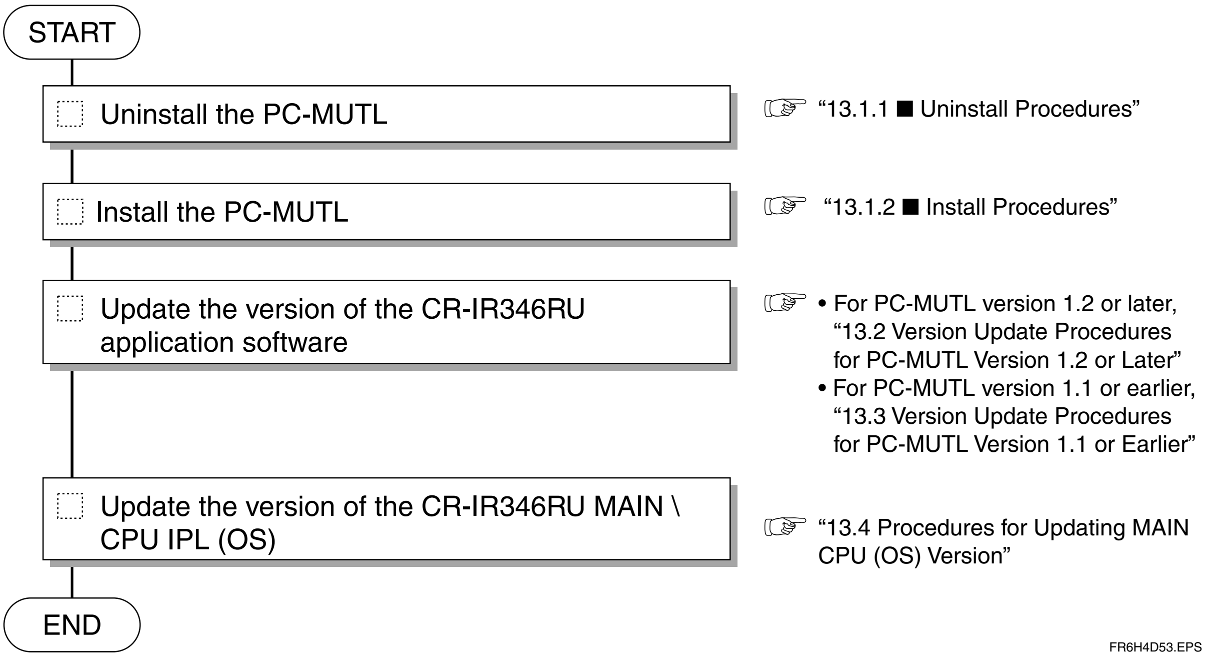
A version update for the CL/RU is executed in the following flow.


Install to the CL
CD-R
Install
CL
Memory (FTP)
Install to the RU
• Application update (restart)
• Configuration update (restart)
RU
CPU12A board (flash ROM)

FR6H4D01.EPS

## ■ Version Update Flow

When the version of the CR-IR346RU software is to be updated, the following flow should be observed.



☐ Uninstall the PC-MUTL

☞ "13.1.1 ■ Uninstall Procedures"

☐ Install the PC-MUTL

☞ "13.1.2 ■ Install Procedures"

☐ Update the version of the CR-IR346RU application software

☞
- For PC-MUTL version 1.2 or later, "13.2 Version Update Procedures for PC-MUTL Version 1.2 or Later"
- For PC-MUTL version 1.1 or earlier, "13.3 Version Update Procedures for PC-MUTL Version 1.1 or Earlier"

☐ Update the version of the CR-IR346RU MAIN \ CPU IPL (OS)

☞ "13.4 Procedures for Updating MAIN CPU (OS) Version"

FR6H4D53.EPS

## ■ Combination of CR-IR346RU Software Version and Scanning Optics Unit Version

When updating the version of the CR-IR346RU software, check the version combination table below and replace the scanning optics unit as well.

| CR-IR346RU software version | Scanning optics unit version |
|---|---|
| –A02 | –839Y0035A/B |
| A02– | 839Y0035C |

TR6H4904.EPS

## ■ Combination of RU Application and MAIN CPU IPL (OS)

| PC application | MAIN CPU IPL (OS) |
|---|---|
| –04 | A01 |
| A05– | A02 |

TR6H4D55.EPS

***◆ NOTES ◆***

- *For combinations other than above, “13802 checksum error” occurs.*
- *If the version of the MAIN CPU IPL (OS) is A01, a connection failure between the RU and CL may occur, so that its version should be updated to A02.*

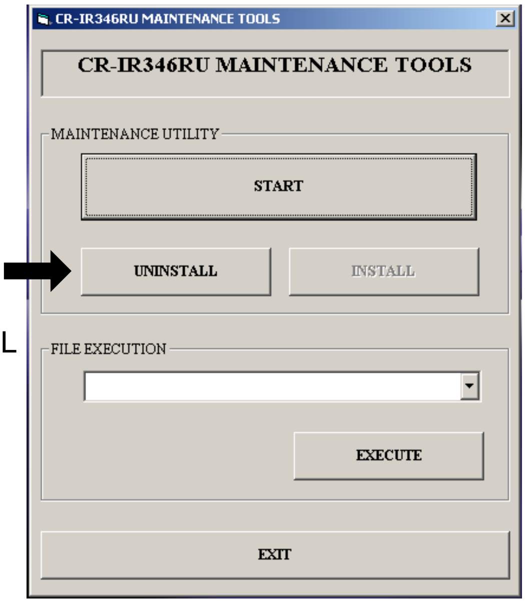
# 13.1 Procedures for Updating the Version of the PC-MUTL Software

**◇ *REFERENCE* ◇**

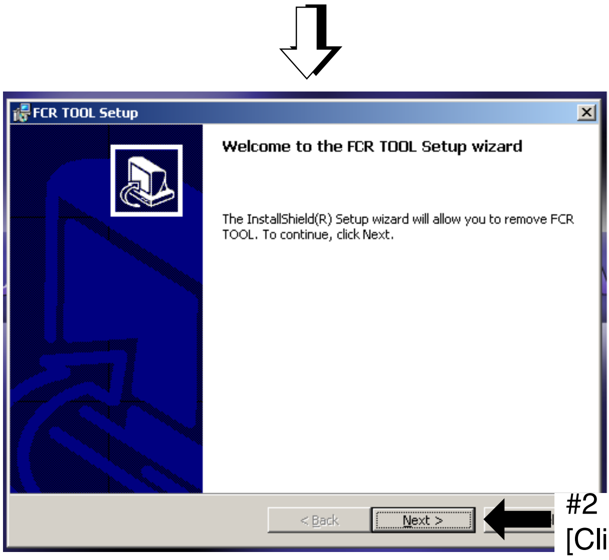
*The version update of the PC-MUTL software can be implemented by uninstalling the current version of the software and then installing a newer version.*
*The current version can be uninstalled by use of a newer version of the Ver.up CD-R.*

## 13.1.1 Uninstall Procedures

(1) Set the Ver.up CD-R in the CL and uninstall the software as instructed on the CL screen.


CR-IR346RU MAINTENANCE TOOLS
CR-IR346RU MAINTENANCE TOOLS
MAINTENANCE UTILITY
START
UNINSTALL
INSTALL
FILE EXECUTION
EXECUTE
EXIT

#1
[Click]
UNINSTALL

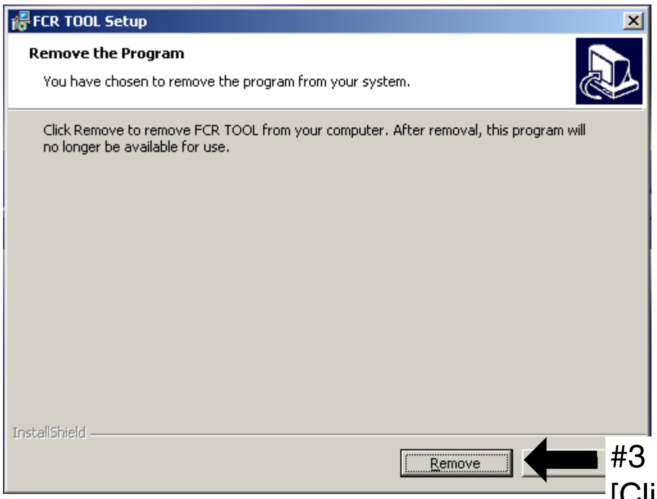

FCR TOOL Setup
< Back
Next >

Welcome to the FCR TOOL Setup wizard

The InstallShield(R) Setup wizard will allow you to remove FCR TOOL. To continue, click Next.

#2
[Click]
Next

FR6H4978.EPS

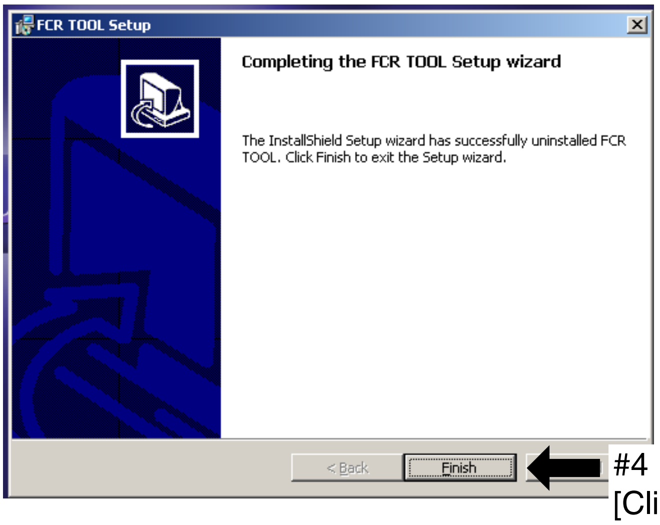

FCR TOOL Setup
InstallShield
Remove

**Remove the Program**

You have chosen to remove the program from your system.

Click Remove to remove FCR TOOL from your computer. After removal, this program will no longer be available for use.

#3
[Click]
Remove


FCR TOOL Setup
< Back
Finish

**Completing the FCR TOOL Setup wizard**

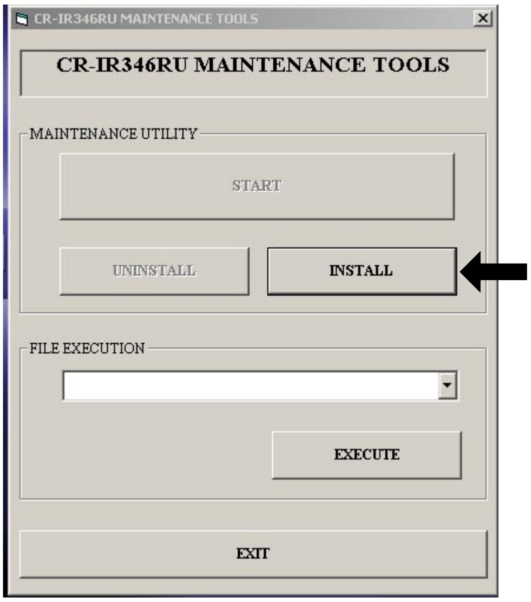
The InstallShield Setup wizard has successfully uninstalled FCR TOOL. Click Finish to exit the Setup wizard.

#4
[Click]
Finish

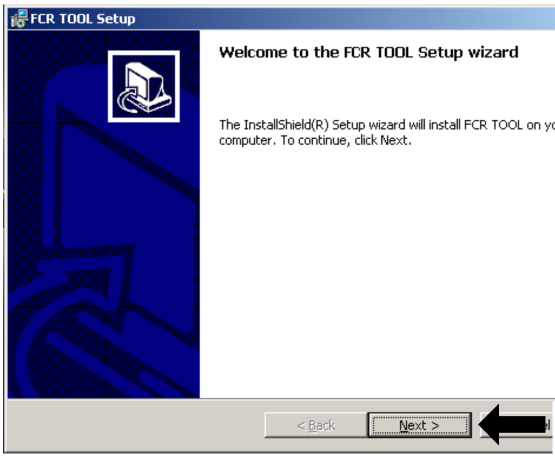
FR6H4979.EPS

## 13.1.2 Install Procedures

(1) Subsequent to the uninstall procedures, install the software as instructed on the CL screen.


CR-IR346RU MAINTENANCE TOOLS
CR-IR346RU MAINTENANCE TOOLS
MAINTENANCE UTILITY
START
UNINSTALL
INSTALL
FILE EXECUTION
EXECUTE
EXIT

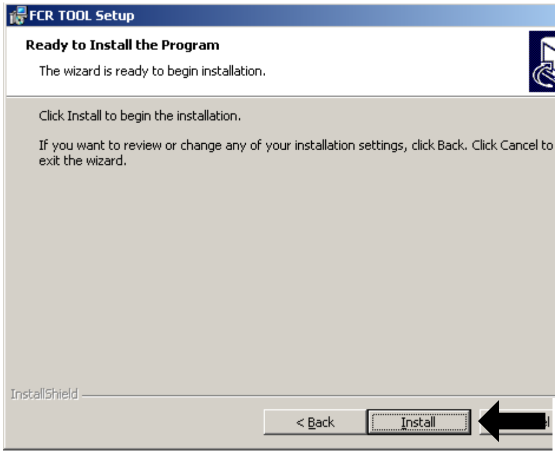
#1
[Click]
INSTALL


FCR TOOL Setup
< Back
Next >

Welcome to the FCR TOOL Setup wizard

The InstallShield(R) Setup wizard will install FCR TOOL on your computer. To continue, click Next.

#2
[Click]
Next


FCR TOOL Setup
InstallShield
< Back
Install

Ready to Install the Program

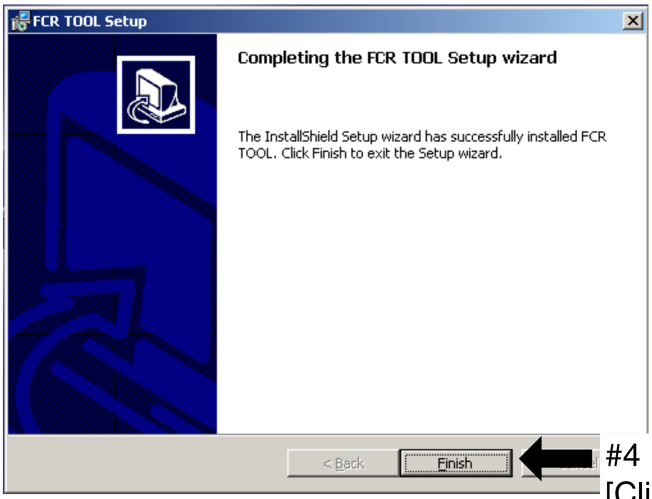
The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

#3
[Click]
Install

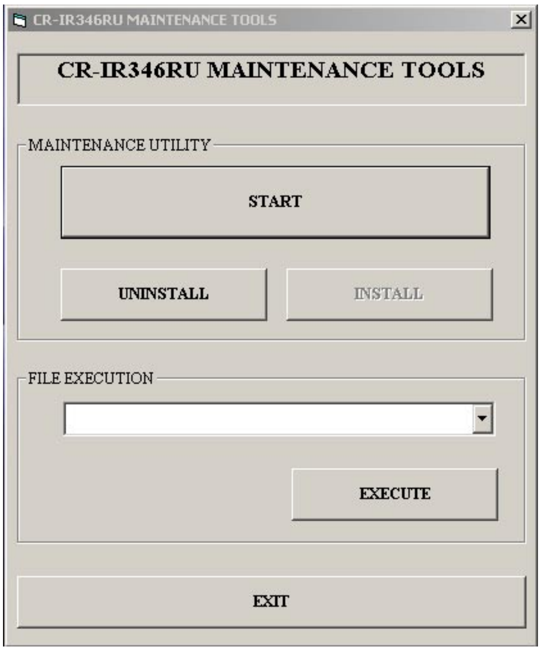
FR6H4980.EPS


FCR TOOL Setup
< Back
Finish

Completing the FCR TOOL Setup wizard

The InstallShield Setup wizard has successfully installed FCR TOOL. Click Finish to exit the Setup wizard.

#4
[Click]
Finish


CR-IR346RU MAINTENANCE TOOLS
CR-IR346RU MAINTENANCE TOOLS
MAINTENANCE UTILITY
START
UNINSTALL
INSTALL
FILE EXECUTION
EXECUTE
EXIT

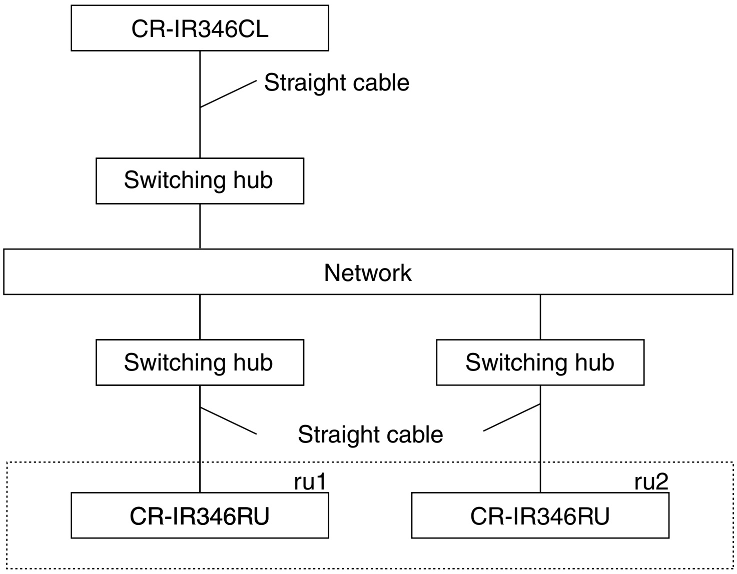
#5
[Click]
EXIT

FR6H4981.EPS

## 13.2 Version Update Procedures for PC-MUTL Version 1.2 or Later

**CAUTIONS**

- *If the RU indicated in "LIST OF EXISTING RU" is not connected, or if an error occurs during version update, the FTP server will be version-updated but the flash ROM will not.*
- *Do not power OFF the CL/RU during version update. If power is turned OFF during version update, the machine will no longer boot up.*
- *Before performing the install procedures, quit all the applications running on the CL.*
- *If the RU application software is to be updated all at once from any version earlier than A04 to version A05 or later, be sure to initialize the backup memory/error log/trace log. If they are not initialized, an error may occur during operation of the RU.*
- *In an N-to-N connection setup, if PREVIOUS VERSION/VERSION UP is executed, the RU software will be sequentially downdated for the RUs connected, one after another. It takes about one and one-half minutes for a single unit.*
  *Do not power OFF the CL and RUs until the installation is completed for all the RUs. After the installation, be sure to check the software versions for all the RUs to verify that the version downdate has been completed.*
  *Example: In a two-unit connection setup, if ru2 and ru1 have been registered in order named in "LIST OF EXISTING RU", then installation is performed for ru2 and ru1 in that order named.*



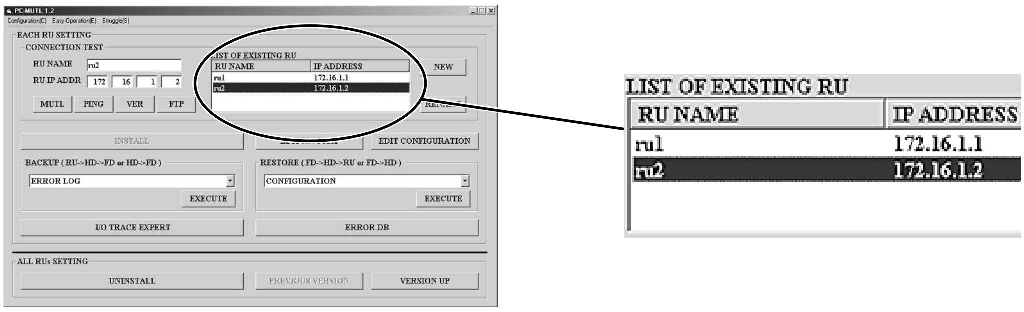
FR6H3200.EPS

- *Before performing the version update procedures described below, make sure that the version of the PC-MUTL is 1.2 or later.*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU” of the PC-MUTL, select a RU.


PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 16 1 2

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

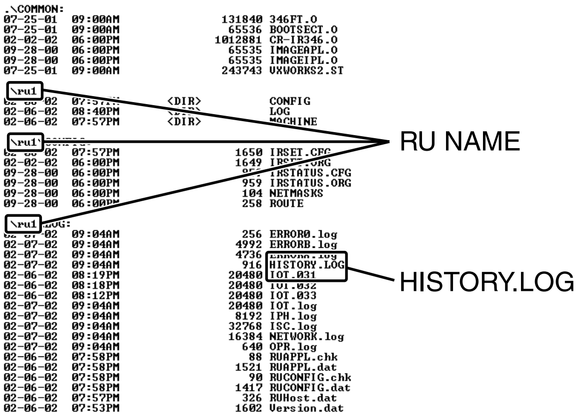
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H4D57.EPS

(4) Click on the [FTP] button.

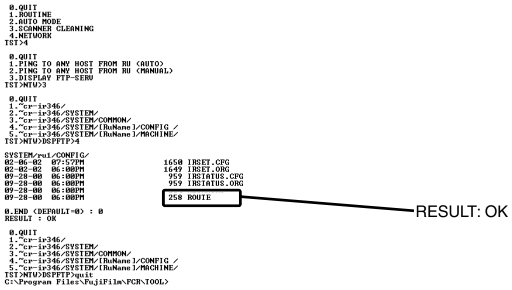
- Screen display where the FTP server is accessed on the CL


RU NAME
HISTORY.LOG

```
.\COMMON:
07-25-01  09:00AM             131840 346FT.O
07-25-01  09:00AM              65536 BOOTSECT.O
02-02-02  06:00PM            1012881 CR-IR346.O
09-28-00  06:00PM              65535 IMAGEAPL.O
09-28-00  06:00PM              65535 IMAGEIPL.O
07-25-01  09:00AM             243743 VXWORKS2.ST

\ru1
02-06-02  07:57PM      <DIR>          CONFIG
02-06-02  08:40PM      <DIR>          LOG
02-06-02  07:57PM      <DIR>          MACHINE

\ru1\CONFIG:
02-06-02  07:57PM               1650 IRSET.CFG
02-02-02  06:00PM               1649 IRSET.ORG
09-28-00  06:00PM                959 IRSTATUS.CFG
09-28-00  06:00PM                959 IRSTATUS.ORG
09-28-00  06:00PM                104 NETMASKS
09-28-00  06:00PM                258 ROUTE

\ru1\LOG:
02-07-02  09:04AM                256 ERROR0.log
02-07-02  09:04AM               4992 ERRORB.log
02-07-02  09:04AM               4736 ERRORA.log
02-07-02  09:04AM                916 HISTORY.LOG
02-06-02  08:19PM              20480 IOT.031
02-06-02  08:18PM              20480 IOT.032
02-06-02  08:12PM              20480 IOT.033
02-07-02  09:04AM              20480 IOT.log
02-07-02  09:04AM               8192 IPH.log
02-07-02  09:04AM              32768 ISC.log
02-07-02  09:04AM              16384 NETWORK.log
02-07-02  09:04AM                640 OPR.log
02-06-02  07:58PM                 88 RUAPPL.chk
02-06-02  07:58PM               1521 RUAPPL.dat
02-06-02  07:58PM                 90 RUCONFIG.chk
02-06-02  07:58PM               1417 RUCONFIG.dat
02-06-02  07:57PM                326 RUHost.dat
02-06-02  07:53PM               1602 Version.dat
```

FR6H4D59.EPS

- Screen display where the FTP server is accessed from the RU



```
 0.QUIT
 1.ROUTINE
 2.AUTO MODE
 3.SCANNER CLEANING
 4.NETWORK
TST>4

 0.QUIT
 1.PING TO ANY HOST FROM RU (AUTO)
 2.PING TO ANY HOST FROM RU (MANUAL)
 3.DISPLAY FTP-SERV
TST>NTW>3

 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>4

SYSTEM/ru1/CONFIG/
02-06-02  07:57PM                1650 IRSET.CFG
02-02-02  06:00PM                1649 IRSET.ORG
09-28-00  06:00PM                 959 IRSTATUS.CFG
09-28-00  06:00PM                 959 IRSTATUS.ORG
09-28-00  06:00PM
09-28-00  06:00PM                 258 ROUTE

0.END (DEFAULT=0) : 0
RESULT : OK

 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>quit
C:\Program Files\FujiFilm\FCR\TOOL>
```

FR6H4D60.EPS

(5) Make sure that the FTP server is normal.

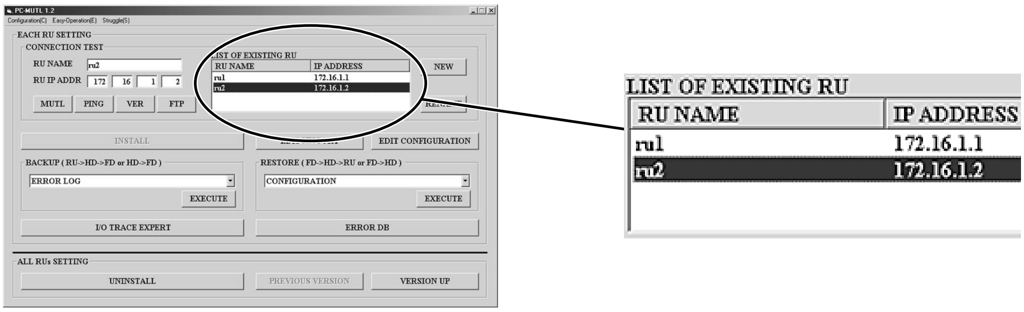
[Checkpoints]

(a) RU NAME - Make sure that RU NAME is the one that has been set.

(b) HISTORY.LOG - Make sure that the capacity is not zero bytes.

(c) RESULT: OK - Make sure that “OK” is displayed.

(6) From “LIST OF EXISTING RU”, select a RU.



PC-MUTL 1.2

RU NAME: ru2

RU IP ADDR: 172 16 1 2

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG

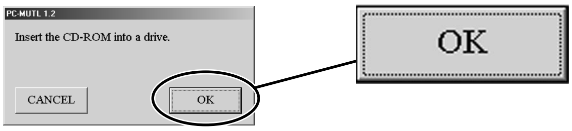
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D61.EPS

(7) Start “VERSION UP”.

(8) Put the Ver.up CD-R into the CL, and click on the [OK] button.

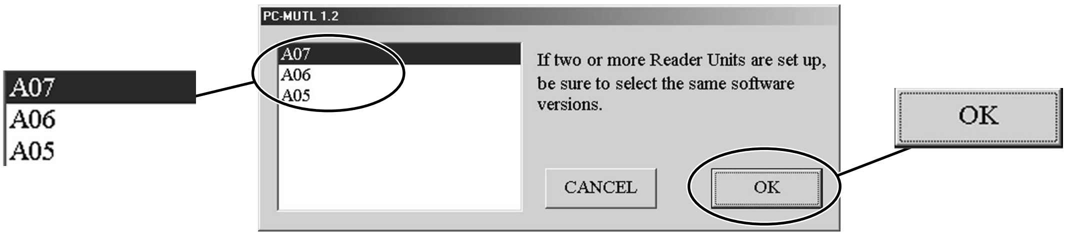

PC-MUTL 1.2

Insert the CD-ROM into a drive.

FR6H4D64.EPS

A dialog box appears to check the version of the software to be installed.

(9) Select the desired version of the software, and click on the [OK] button.

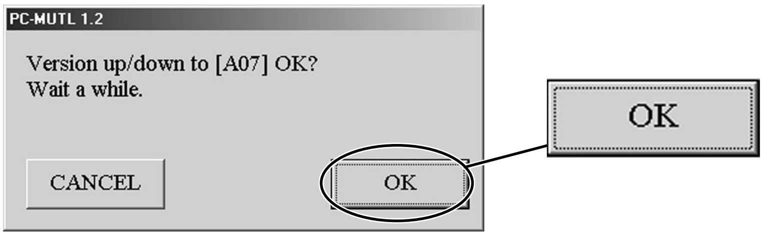

PC-MUTL 1.2

If two or more Reader Units are set up, be sure to select the same software versions.

FR6H4D65.EPS

A window appears to confirm the execution of version update.

(10) Click on the [OK] button.


PC-MUTL 1.2

Version up/down to [A07] OK?
Wait a while.

FR6H4D66.EPS

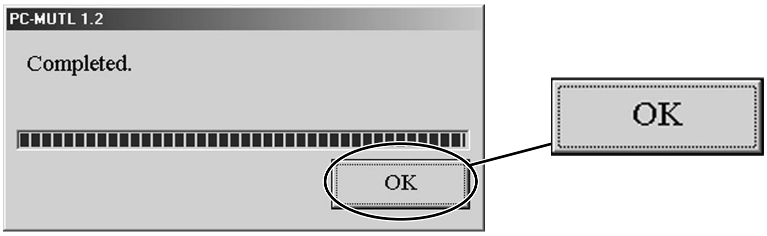
The version update of the RU software starts.

During that time, all the panel indicators on the first RU are lit, with an audible alarm generated.

After about two minutes have passed, the version update is completed for the first RU, and then the version update for the next RU starts.

When the version update for all the RUs connected to the CL is completed, the following dialog box appears.

(11) Click on the [OK] button.

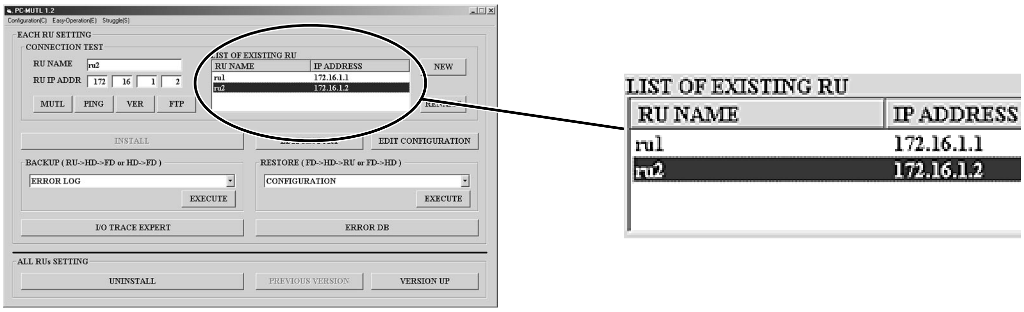

PC-MUTL 1.2

Completed.

FR6H4D67.EPS

The PC-MUTL window appears back on screen.

(12) From “LIST OF EXISTING RU”, select a RU where the backup memory is to be cleared.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
RENAME
INSTALL
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2
RU IP ADDR: 172 16 1 2
BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

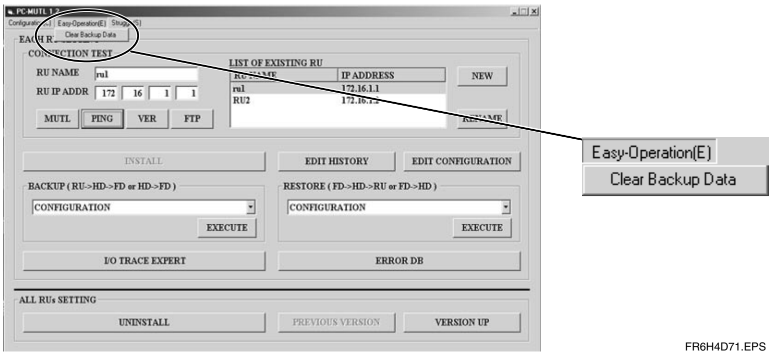
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H4D70.EPS

(13) [Easy-Operation] → [Clear Backup Data]

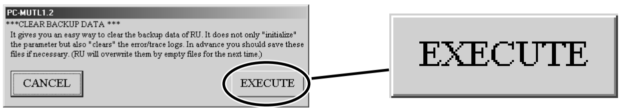
A dialog box appears to ask whether to execute clear.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
Clear Backup Data
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
RU NAME
IP ADDRESS
NEW
RENAME
MUTL
PING
VER
FTP
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
Easy-Operation(E)
Clear Backup Data

RU NAME: ru1
RU IP ADDR: 172 16 1 1
ru1 172.16.1.1
RU2 172.16.1.2
BACKUP ( RU->HD->FD or HD->FD ): CONFIGURATION
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

FR6H4D71.EPS

(14) Click on the [EXECUTE] button.

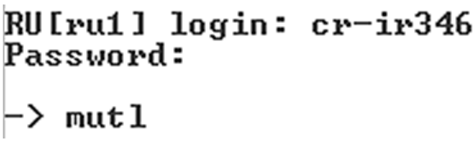

PC-MUTL1.2
CANCEL
EXECUTE
EXECUTE

***CLEAR BACKUP DATA ***

It gives you an easy way to clear the backup data of RU. It does not only "initialize" the parameter but also "clears" the error/trace logs. In advance you should save these files if necessary. (RU will overwrite them by empty files for the next time.)

FR6H4D72.EPS

A DOS prompt appears.



```
RU[ru1] login: cr-ir346
Password:

-> mutl
```

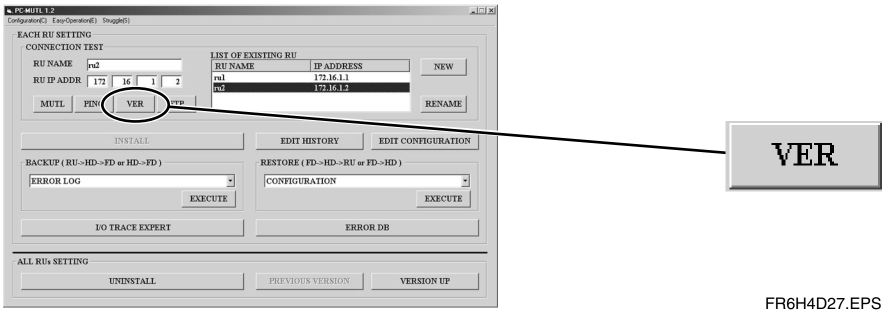
FR6H4D73.EPS

(15) Start the M-Utility.

(16) [1][ENT] → [1][ENT] → [1][ENT] → [3][ENT]

Make sure that the error log has been cleared.

(17) Start “VER” to check the version.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PIN(
VER
FTP
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
VER

RU NAME: ru2

RU IP ADDR: 172 . 16 . 1 . 2

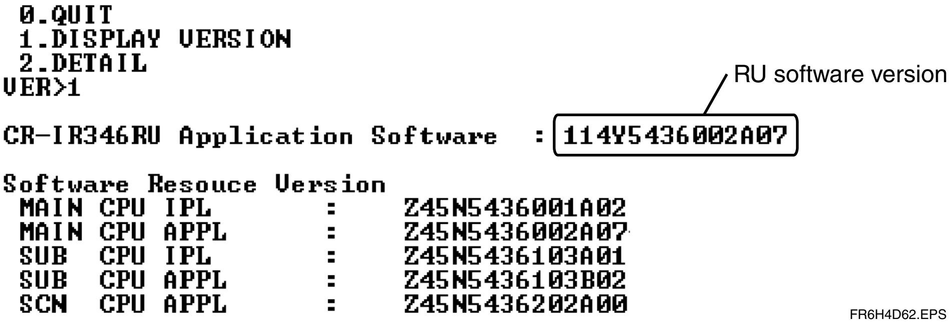
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG

RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

FR6H4D27.EPS


RU software version

```
 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>1

CR-IR346RU Application Software  : 114Y5436002A07

Software Resouce Version
 MAIN CPU IPL       :    Z45N5436001A02
 MAIN CPU APPL      :    Z45N5436002A07
 SUB  CPU IPL       :    Z45N5436103A01
 SUB  CPU APPL      :    Z45N5436103B02
 SCN  CPU APPL      :    Z45N5436202A00
```

FR6H4D62.EPS

(18) Click on ☒ to quit the PC-MUTL.

(19) Click on **Start** and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

(20) Output an image exposed at 1 mR.

### ◆ *CHECKS* ◆

- *There should be no offensive noise or odor.*
- *There should be no IP jam.*
- *The IP should be free from any scratch or damage after reading.*

*If anything abnormal is found, see “Troubleshooting Volume”.*

(21) Check the output film and image.

### ◆ *CHECK* ◆

*There should be no unusual nonuniformity.*
*If anything abnormal is found, see “Troubleshooting Volume”.*

(22) Reconnect the RU/CL that were disconnected from the network (i.e., power them ON or connect their I/F cables).

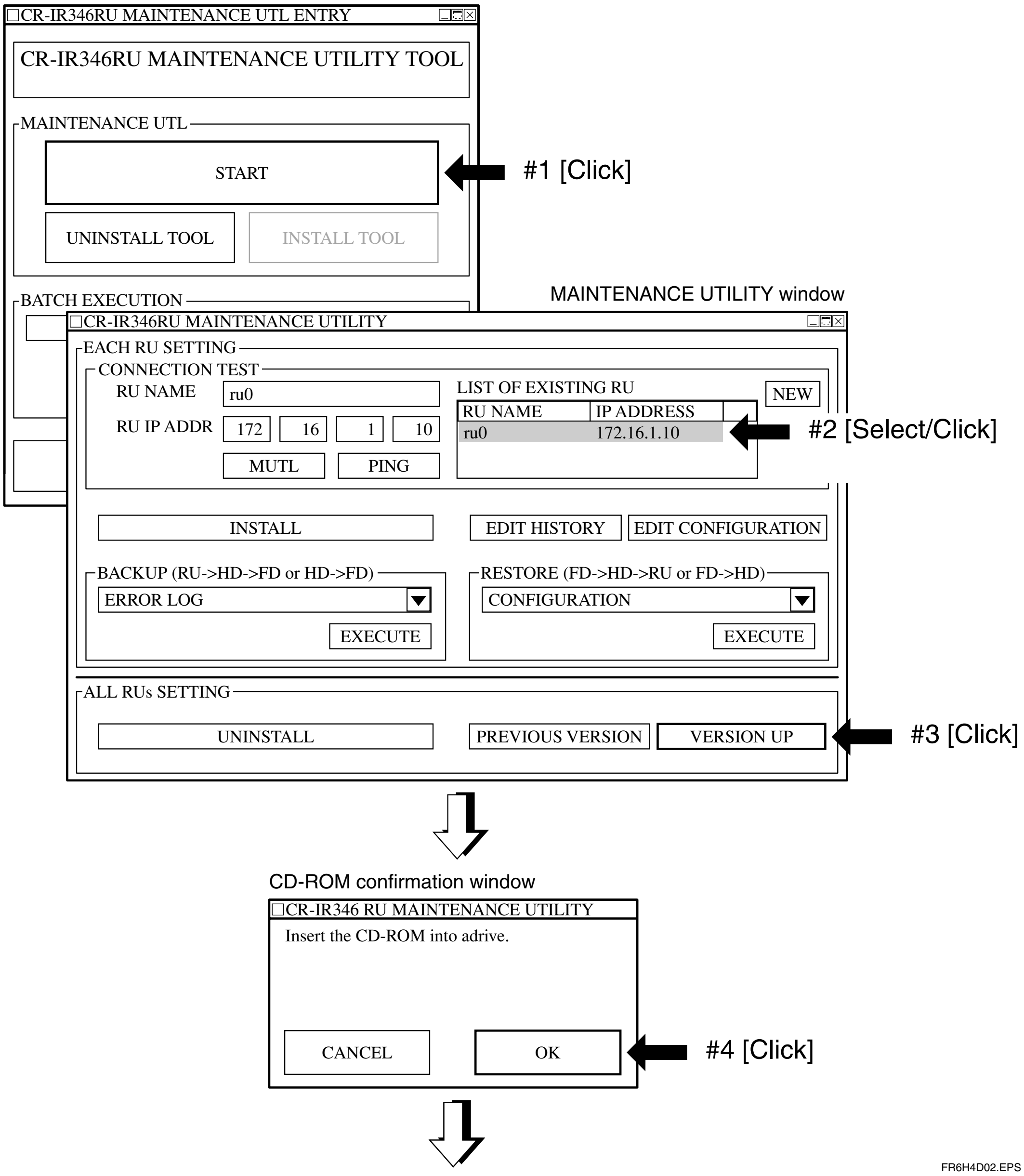
# 13.3 Version Update Procedures for PC-MUTL Version 1.1 or Earlier

**CAUTIONS**

- *Do not power OFF the CL/RU during version update. If it is powered OFF during version update, the machine will not boot up.*
- *Before performing the install procedures, quit all the applications running on the CL.*
- *If the RU application software is to be updated all at once from any version earlier than A04 to version A05 or later, be sure to initialize the backup memory/error log/trace log. If they are not initialized, an error may occur during operation of the RU.*

(1) Exit the CL software.

(2) Set the Ver.up CD-R in the CL and observe the on-screen instructions of the CL to perform version update.



CL version update start window

☐CR-IR346RU MAINTENANCE UTL ENTRY

CR-IR346RU MAINTENANCE UTILITY TOOL

MAINTENANCE UTL

#1 [Click]

MAINTENANCE UTILITY window

☐CR-IR346RU MAINTENANCE UTILITY

EACH RU SETTING

CONNECTION TEST

RU NAME: ru0

RU IP ADDR: 172 16 1 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

#2 [Select/Click]

BACKUP (RU->HD->FD or HD->FD): ERROR LOG

RESTORE (FD->HD->RU or FD->HD): CONFIGURATION

ALL RUs SETTING

#3 [Click]

CD-ROM confirmation window

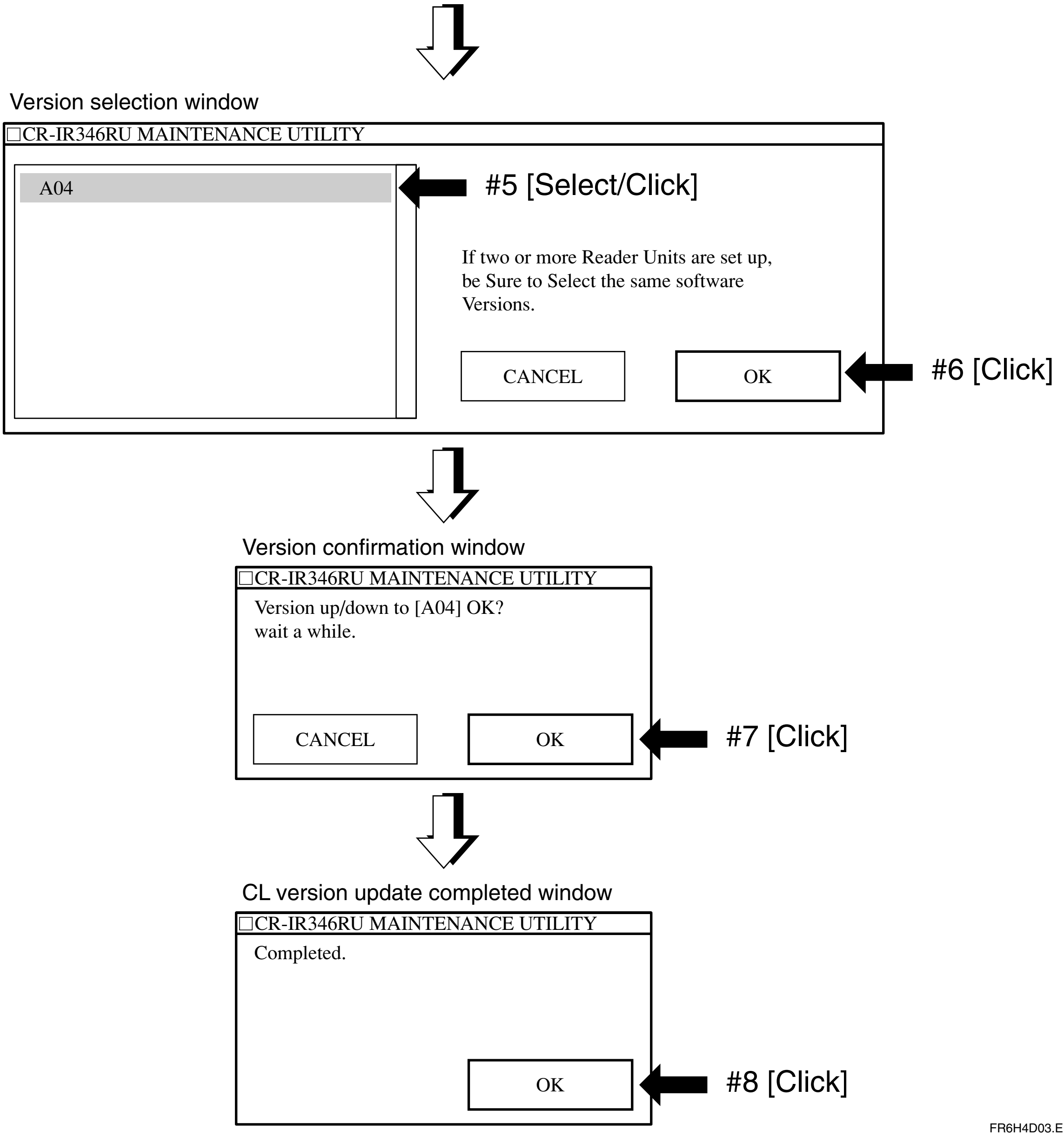
☐CR-IR346 RU MAINTENANCE UTILITY

Insert the CD-ROM into adrive.

#4 [Click]

START
UNINSTALL TOOL
INSTALL TOOL
BATCH EXECUTION
NEW
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
UNINSTALL
PREVIOUS VERSION
VERSION UP
CANCEL
OK

FR6H4D02.EPS


Version selection window

□CR-IR346RU MAINTENANCE UTILITY

A04

#5 [Select/Click]

If two or more Reader Units are set up, be Sure to Select the same software Versions.

#6 [Click]

Version confirmation window

□CR-IR346RU MAINTENANCE UTILITY

Version up/down to [A04] OK?
wait a while.

#7 [Click]

CL version update completed window

□CR-IR346RU MAINTENANCE UTILITY

Completed.

#8 [Click]

FR6H4D03.EPS

(3) Start the CL software.

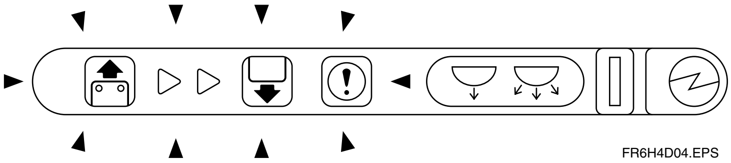
(4) Take out the Ver.up CD-R.

**CAUTION**

*Do not power OFF the CL/RU during version update.*
*If it is powered OFF during version update, the machine will not boot up.*

**◇ REFERENCE ◇**

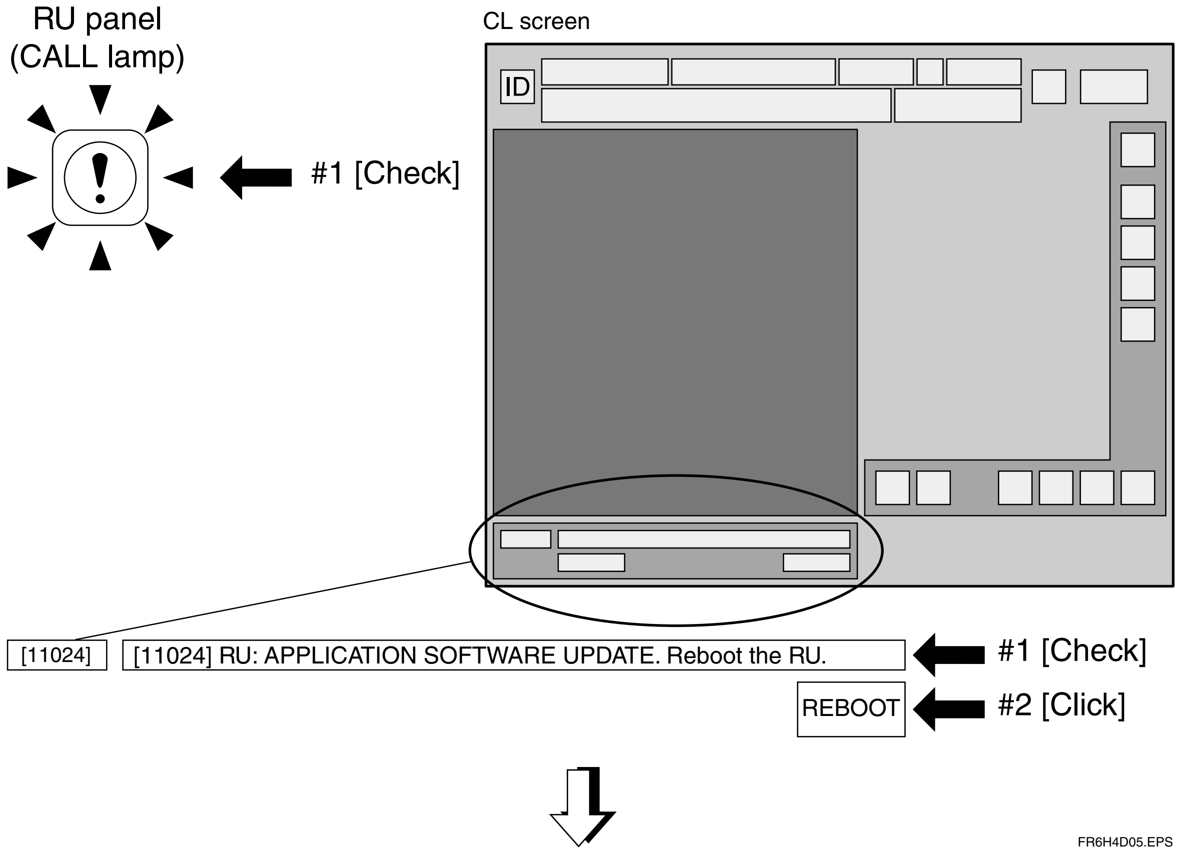
*When the RU is powered OFF and then back ON, the installation from the CL starts.*
*At this time, all the indicators on the panel of the RU are illuminated, and an audible alarm is generated.*



FR6H4D04.EPS

(5) Verify that the RU call lamp is illuminated, with [11024] displayed on the CL screen, and restart the RU from the CL screen.

When it is restarted, the RU is power OFF and then back ON with all indicators on the panel illuminated, and an audible alarm (three short beeps) is generated.

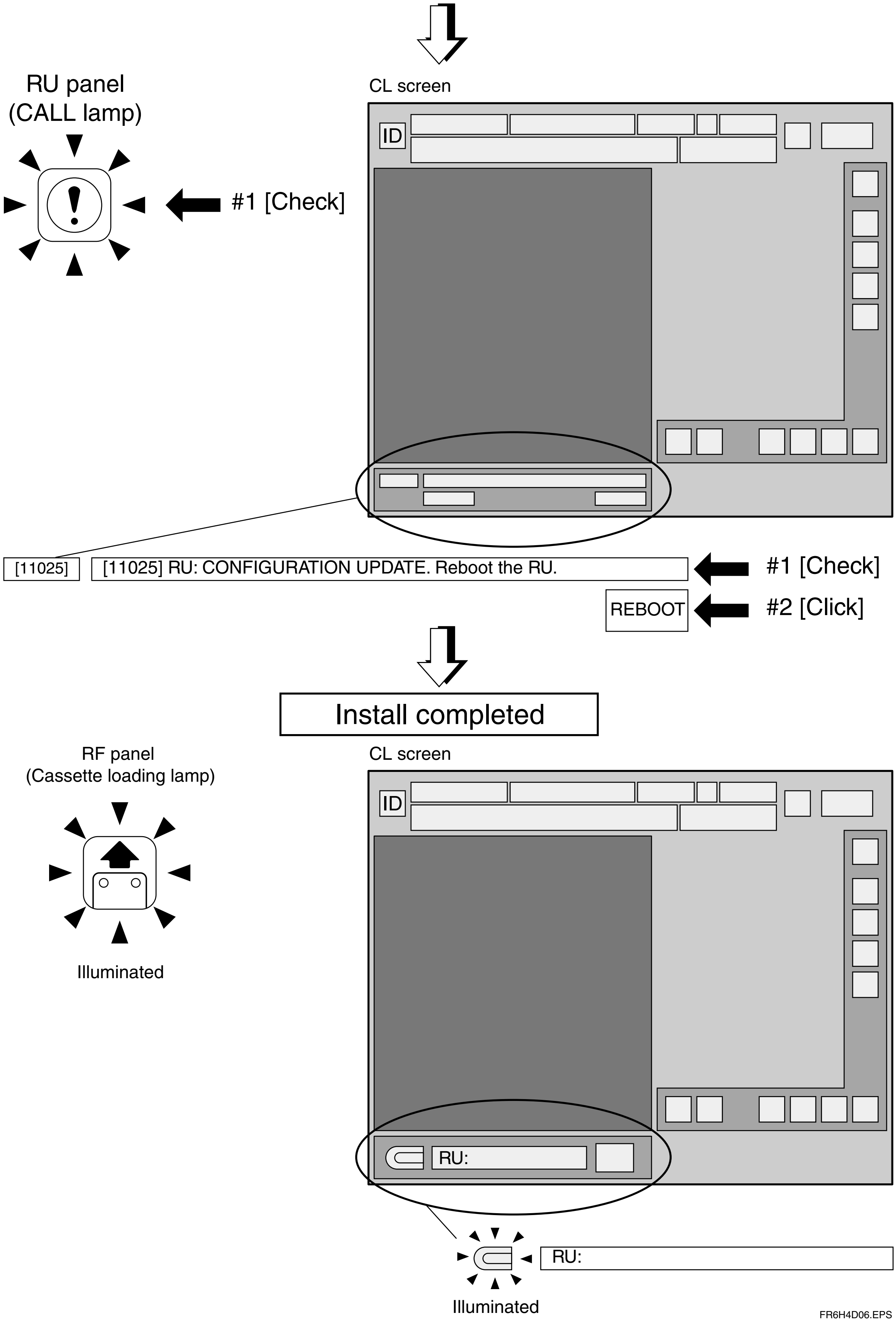


[11024] [11024] RU: APPLICATION SOFTWARE UPDATE. Reboot the RU.

FR6H4D05.EPS

(6) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and restart the RU from the CL screen.

When it is restarted, all the indicators on the panel are illuminated, and an audible alarm is generated.



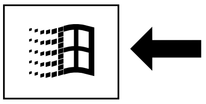
[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

Install completed

RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11025]
#1 [Check]
REBOOT
#2 [Click]
RF panel
(Cassette loading lamp)
Illuminated
CL screen
ID
RU:
RU:
Illuminated
FR6H4D06.EPS

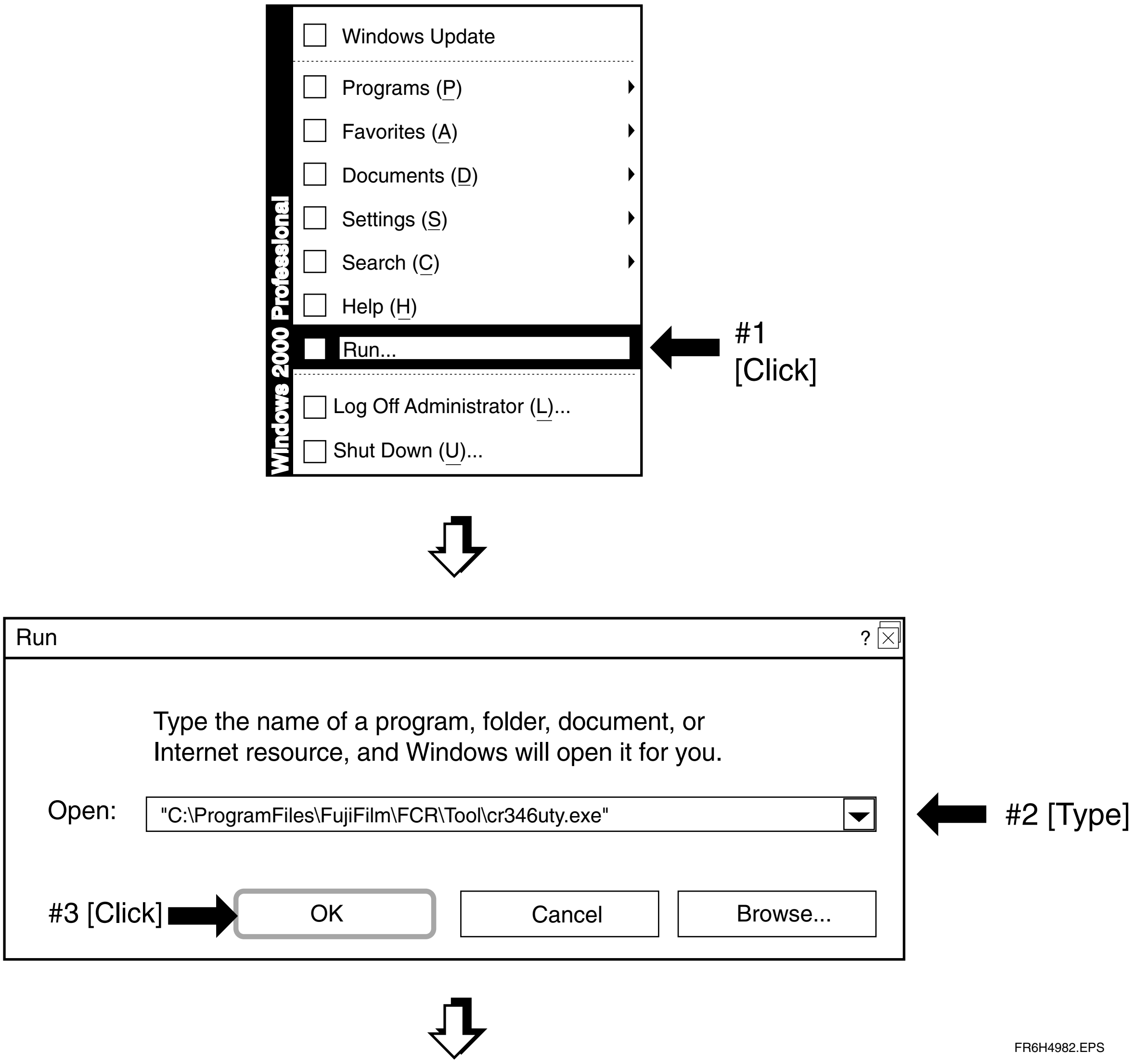
(7) Exit the CL software.

(8) Press the [Windows] key to open the Start menu of Windows.



Press.

(9) Select [Run...] from the Start menu of Windows, and type ["C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"] to open the MAINTENANCE UTILITY, and start M-Utility.

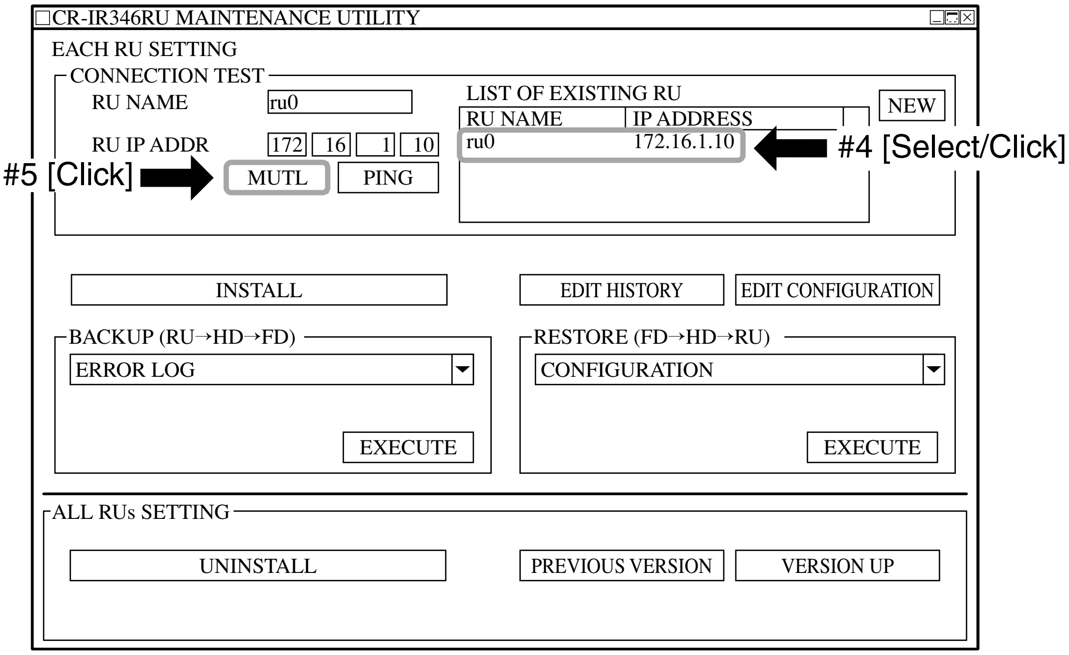

Windows 2000 Professional
☐ Windows Update
☐ Programs (P)
☐ Favorites (A)
☐ Documents (D)
☐ Settings (S)
☐ Search (C)
☐ Help (H)
☐ Run...
☐ Log Off Administrator (L)...
☐ Shut Down (U)...
#1 [Click]
Run
?
#2 [Type]
#3 [Click]
OK
Cancel
Browse...

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: "C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"

FR6H4982.EPS

RU SERVICE UTILITY screen



CR-IR346RU MAINTENANCE UTILITY

EACH RU SETTING

CONNECTION TEST

RU NAME: ru0

RU IP ADDR: 172 . 16 . 1 . 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

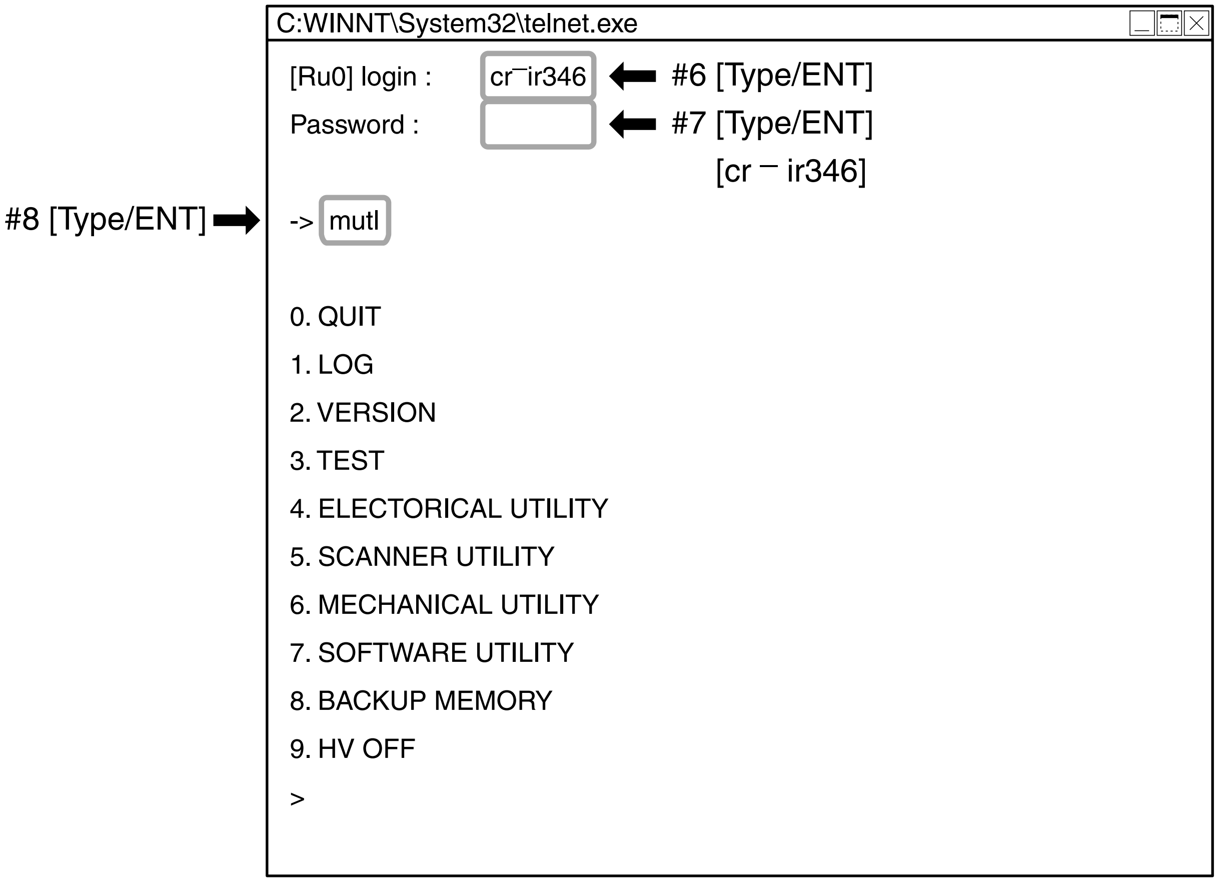
BACKUP (RU→HD→FD): ERROR LOG

RESTORE (FD→HD→RU): CONFIGURATION

MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

#4 [Select/Click]

#5 [Click]



C:WINNT\System32\telnet.exe

```
[Ru0] login :  cr¯ir346
Password :

-> mutl

0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTORICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
>
```

#6 [Type/ENT]

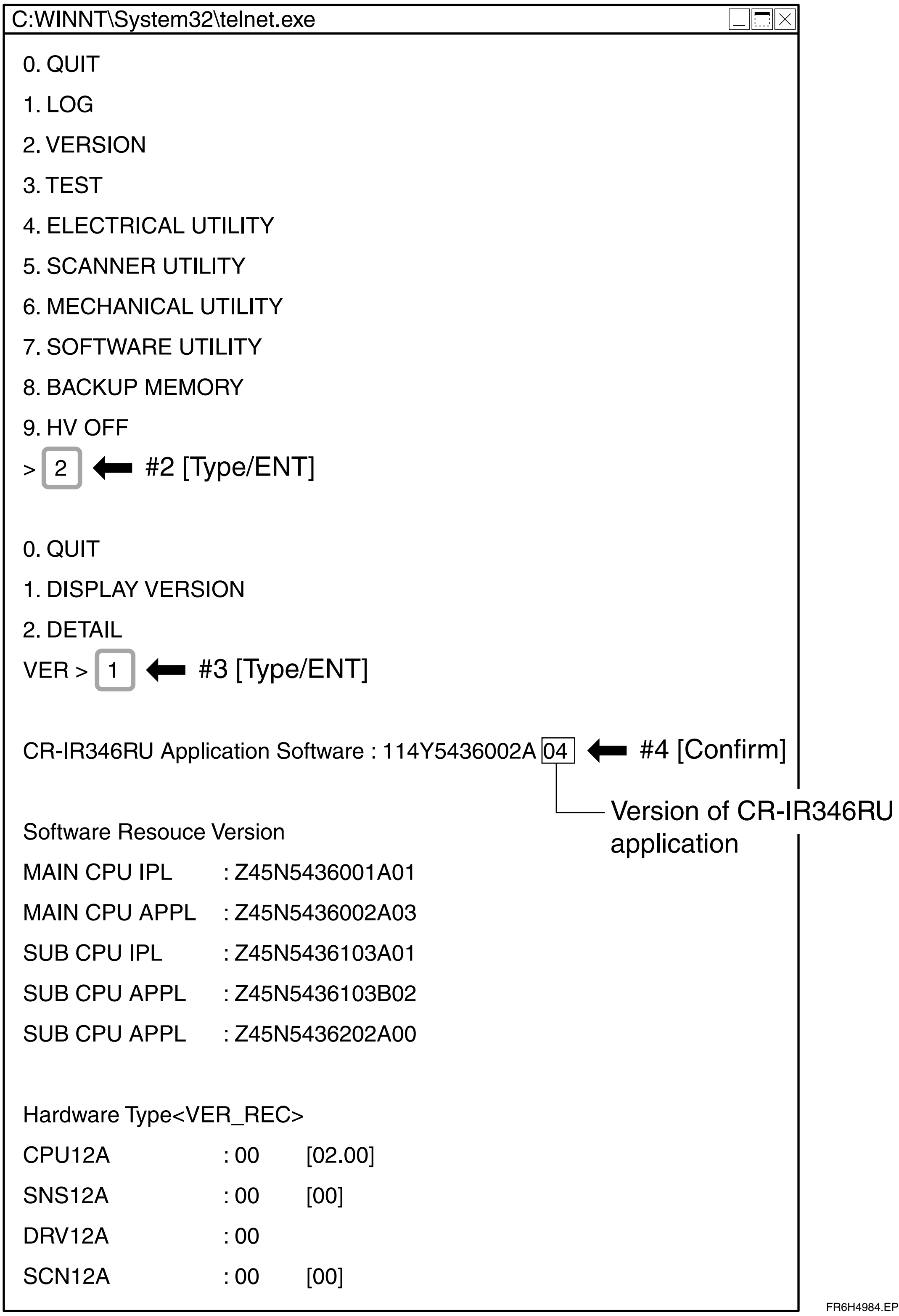
#7 [Type/ENT]
[cr ¯ ir346]

#8 [Type/ENT]

FR6H4983.EPS

(10) Select VERSION to confirm the version of the CR-IR346RU application software.

Example: When the version is updated to A03 or A04



```
C:WINNT\System32\telnet.exe

0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
> 2

0. QUIT
1. DISPLAY VERSION
2. DETAIL
VER > 1

CR-IR346RU Application Software : 114Y5436002A04

Software Resouce Version
MAIN CPU IPL     : Z45N5436001A01
MAIN CPU APPL    : Z45N5436002A03
SUB CPU IPL      : Z45N5436103A01
SUB CPU APPL     : Z45N5436103B02
SUB CPU APPL     : Z45N5436202A00

Hardware Type<VER_REC>
CPU12A           : 00     [02.00]
SNS12A           : 00     [00]
DRV12A           : 00
SCN12A           : 00     [00]
```

#2 [Type/ENT]

#3 [Type/ENT]

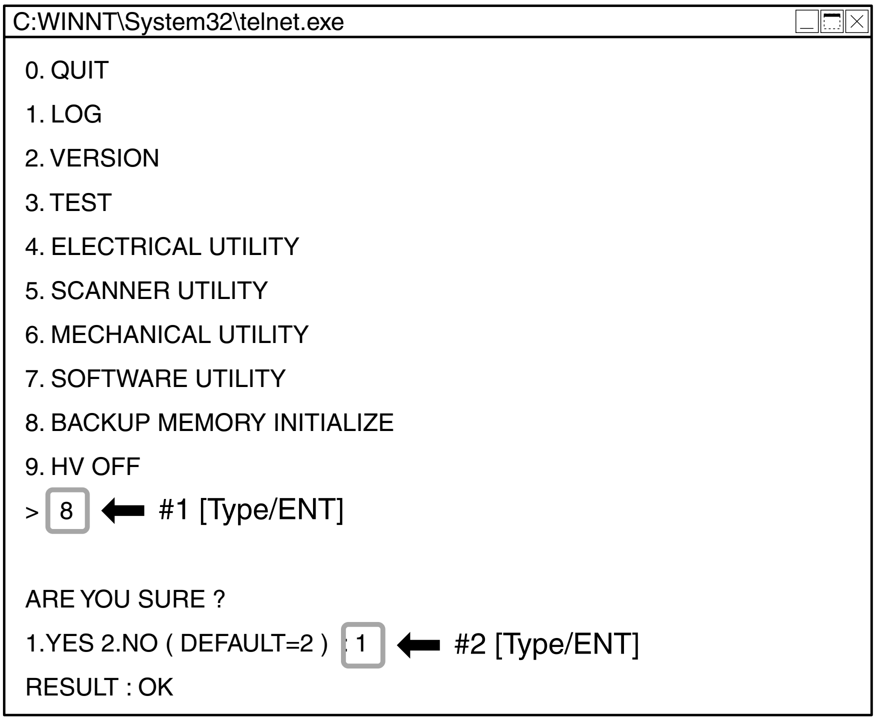
#4 [Confirm]

Version of CR-IR346RU application

FR6H4984.EPS

(11) Select “BACKUP MEMORY INITIALIZE” and initialize the backup memory.

❍ For software version of A05 or later



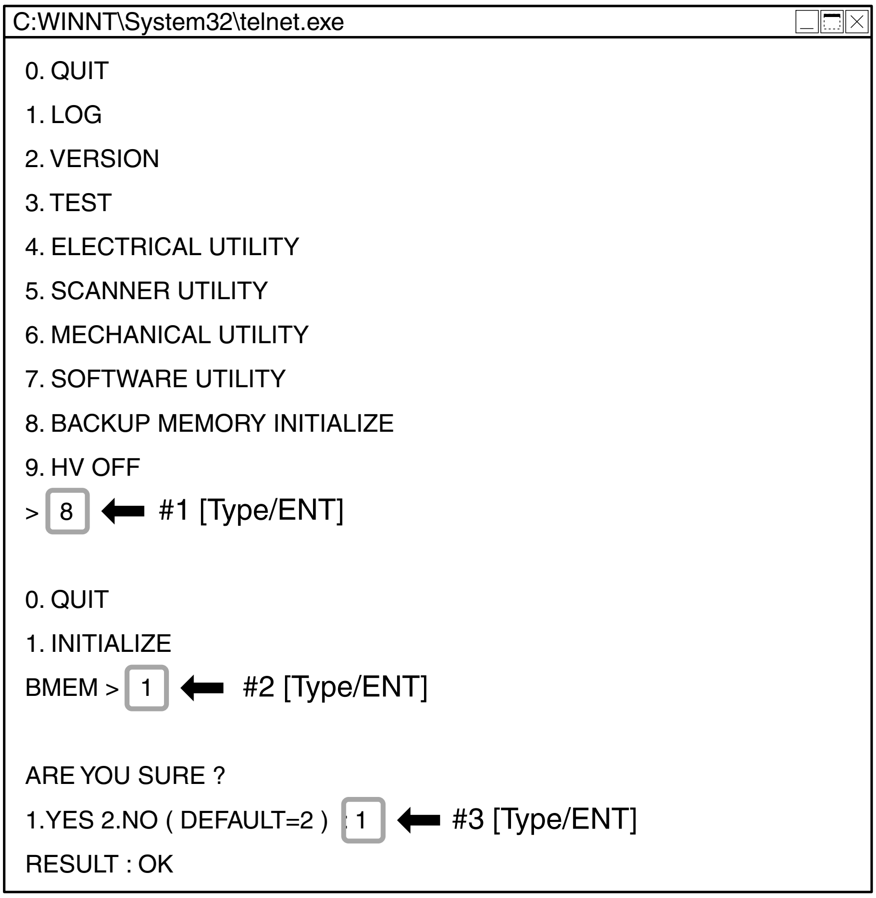
C:WINNT\System32\telnet.exe

```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY INITIALIZE
9. HV OFF
> 8

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1
RESULT : OK
```

#1 [Type/ENT]

#2 [Type/ENT]

❍ For software version of A04 or earlier



C:WINNT\System32\telnet.exe

```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY INITIALIZE
9. HV OFF
> 8

0. QUIT
1. INITIALIZE
BMEM > 1

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1
RESULT : OK
```

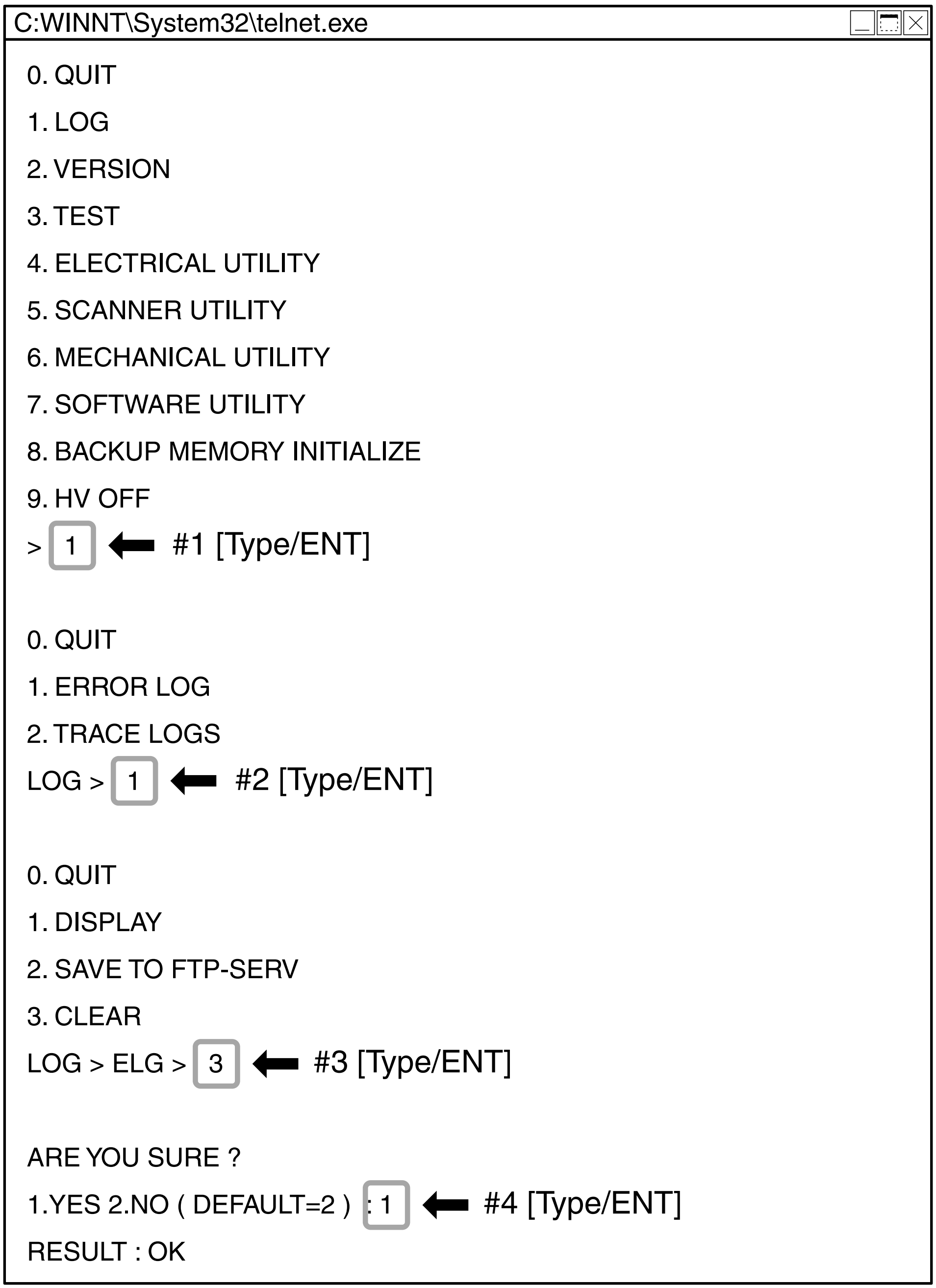
#1 [Type/ENT]

#2 [Type/ENT]

#3 [Type/ENT]

FR6H4985.EPS

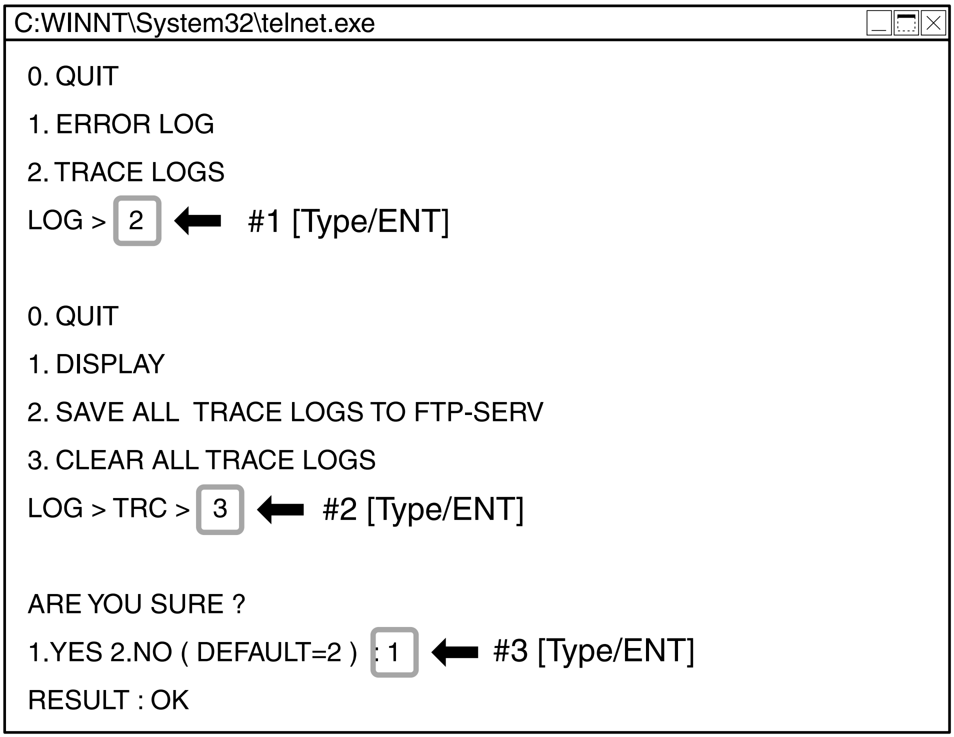
(12) Select “LOG” and initialize the error log.



```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY INITIALIZE
9. HV OFF
> 1    #1 [Type/ENT]

0. QUIT
1. ERROR LOG
2. TRACE LOGS
LOG > 1    #2 [Type/ENT]

0. QUIT
1. DISPLAY
2. SAVE TO FTP-SERV
3. CLEAR
LOG > ELG > 3    #3 [Type/ENT]

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1    #4 [Type/ENT]
RESULT : OK
```

FR6H4986.EPS

(13) Select “LOG” and initialize the trace log.



C:WINNT\System32\telnet.exe

```
0. QUIT
1. ERROR LOG
2. TRACE LOGS
LOG > 2

0. QUIT
1. DISPLAY
2. SAVE ALL  TRACE LOGS TO FTP-SERV
3. CLEAR ALL TRACE LOGS
LOG > TRC > 3

ARE YOU SURE ?
1.YES 2.NO ( DEFAULT=2 ) : 1
RESULT : OK
```

#1 [Type/ENT]

#2 [Type/ENT]

#3 [Type/ENT]

FR6H4987.EPS

(14) Click on ☒ to quit the PC-MUTL.

(15) Click on Start and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

(16) Output the image exposed at 1 mR.

**◆ *CHECKS* ◆**

---

- *There should be no offensive noise or odor.*
- *There should be no IP jam.*
- *The IP should be free from any scratch or damage after reading.*

*If anything abnormal is found, see [Troubleshooting Volume].*

---

(17) Check the output film and image.

**◆ *CHECK* ◆**

---

*There should be no unusual nonuniformity.*
*If anything abnormal is found, see [Troubleshooting Volume].*

---

(18) Restore the RU/CL that has been disconnected from the network to its connected state (i.e., power it ON or connect its I/F cable).

## 13.4 Procedures for Updating MAIN CPU (OS) Version

### ■ Combination of RU Application and MAIN CPU IPL (OS)

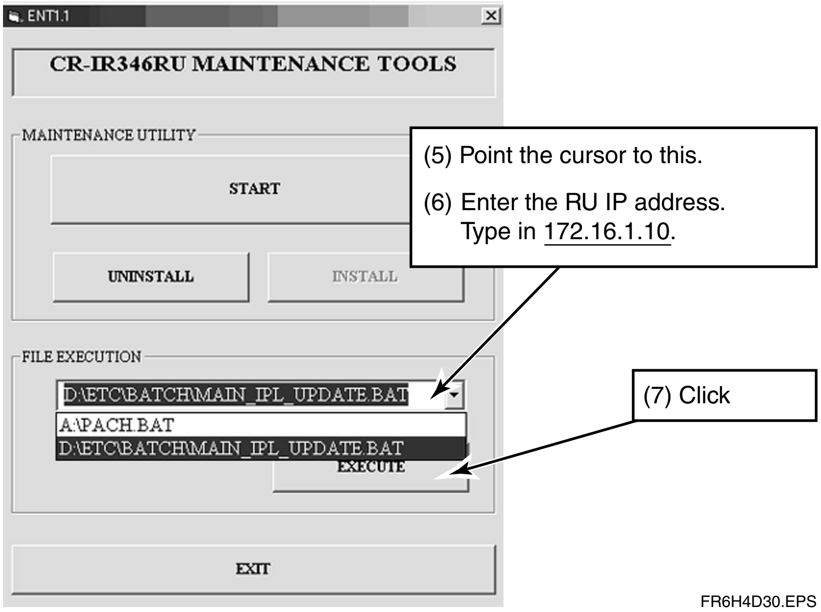
| PC application | MAIN CPU IPL (OS) |
|---|---|
| –04 | A01 |
| A05– | A02 |

TR6H4D55.EPS

**CAUTION**

*Do not power OFF the RU while data is being written into the flash ROM of the CPU12A board. If power is turned OFF, the contents of the flash ROM will be corrupted, so that it is necessary to replace the CPU12A board with a new one.*

(1) Exit the CL software.
(2) Check the IP address of the RU.
(3) Put the Ver.up CD-R (114Y5436002A05 or later) into the CL.
(4) Select a patch file.


ENT1.1
CR-IR346RU MAINTENANCE TOOLS
MAINTENANCE UTILITY
START
UNINSTALL
INSTALL
FILE EXECUTION
D:\ETC\BATCH\MAIN_IPL_UPDATE.BAT
A:\PACH.BAT
D:\ETC\BATCH\MAIN_IPL_UPDATE.BAT
EXECUTE
EXIT

(5) Point the cursor to this.

(6) Enter the RU IP address.
Type in 172.16.1.10.

(7) Click

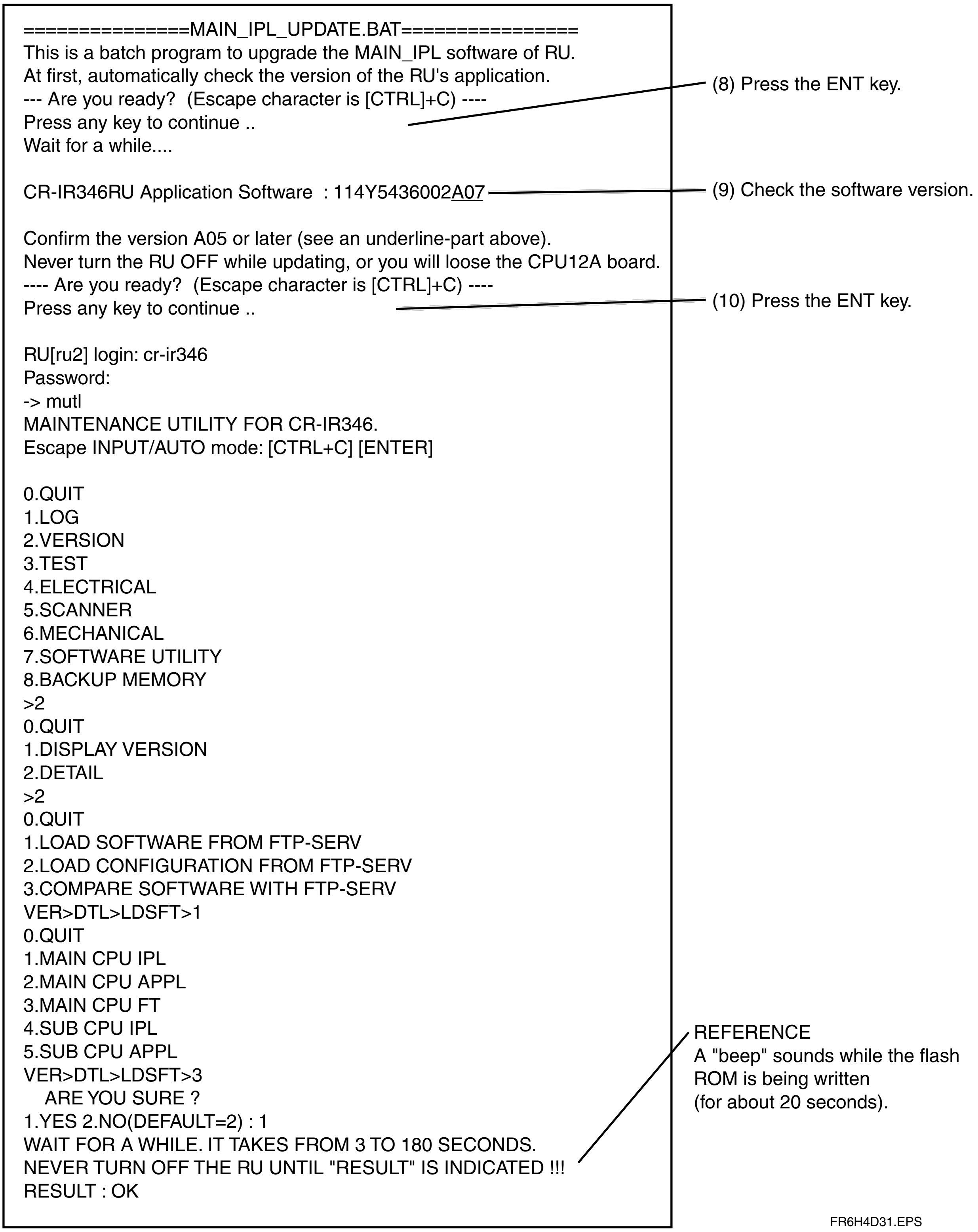
FR6H4D30.EPS

"Input example": If the RU IP address is its default value (172.16.1.10):

~ BAT 172.16.1.10

**◆ NOTE ◆**

*The underlined portion represents an input item. It is not an underbar entry.*



```
===============MAIN_IPL_UPDATE.BAT================
This is a batch program to upgrade the MAIN_IPL software of RU.
At first, automatically check the version of the RU's application.
--- Are you ready?  (Escape character is [CTRL]+C) ----
Press any key to continue ..
Wait for a while....

CR-IR346RU Application Software  : 114Y5436002A07

Confirm the version A05 or later (see an underline-part above).
Never turn the RU OFF while updating, or you will loose the CPU12A board.
---- Are you ready?  (Escape character is [CTRL]+C) ----
Press any key to continue ..

RU[ru2] login: cr-ir346
Password:
-> mutl
MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

0.QUIT
1.LOG
2.VERSION
3.TEST
4.ELECTRICAL
5.SCANNER
6.MECHANICAL
7.SOFTWARE UTILITY
8.BACKUP MEMORY
>2
0.QUIT
1.DISPLAY VERSION
2.DETAIL
>2
0.QUIT
1.LOAD SOFTWARE FROM FTP-SERV
2.LOAD CONFIGURATION FROM FTP-SERV
3.COMPARE SOFTWARE WITH FTP-SERV
VER>DTL>LDSFT>1
0.QUIT
1.MAIN CPU IPL
2.MAIN CPU APPL
3.MAIN CPU FT
4.SUB CPU IPL
5.SUB CPU APPL
VER>DTL>LDSFT>3
   ARE YOU SURE ?
1.YES 2.NO(DEFAULT=2) : 1
WAIT FOR A WHILE. IT TAKES FROM 3 TO 180 SECONDS.
NEVER TURN OFF THE RU UNTIL "RESULT" IS INDICATED !!!
RESULT : OK
```

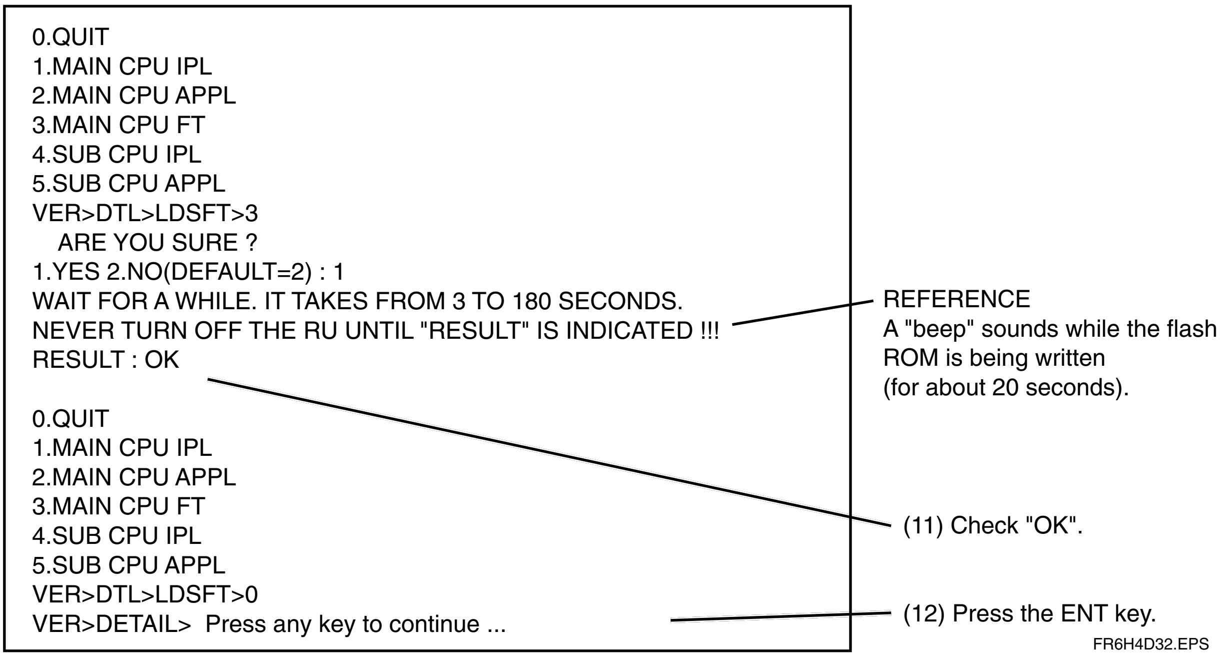
(8) Press the ENT key.

(9) Check the software version.

(10) Press the ENT key.

REFERENCE
A "beep" sounds while the flash ROM is being written (for about 20 seconds).

FR6H4D31.EPS



```
0.QUIT
1.MAIN CPU IPL
2.MAIN CPU APPL
3.MAIN CPU FT
4.SUB CPU IPL
5.SUB CPU APPL
VER>DTL>LDSFT>3
   ARE YOU SURE ?
1.YES 2.NO(DEFAULT=2) : 1
WAIT FOR A WHILE. IT TAKES FROM 3 TO 180 SECONDS.
NEVER TURN OFF THE RU UNTIL "RESULT" IS INDICATED !!!
RESULT : OK

0.QUIT
1.MAIN CPU IPL
2.MAIN CPU APPL
3.MAIN CPU FT
4.SUB CPU IPL
5.SUB CPU APPL
VER>DTL>LDSFT>0
VER>DETAIL>  Press any key to continue ...
```

REFERENCE
A "beep" sounds while the flash ROM is being written (for about 20 seconds).

(11) Check "OK".

(12) Press the ENT key.

FR6H4D32.EPS

(13) Click "EXIT".

# 14. Procedures for Restoring the Application Software in the Flash ROM

The RU application is updated via a network.

This function is used, for example, when the RU application in the flash ROM is corrupted so that the RU does not boot up.

**CAUTIONS**

- *Do not power OFF the RU and CL during RU application update. If power is turned OFF during update, the machine will no longer boot up.*
- *When the M-Utility can be started (can be logged in), the procedures described in this section should not be performed.*  
  *If the procedures are inadvertently performed under condition where the M-Utility can be started, the CPU12A board should be replaced with a new one.*
- *Make sure that there is no machine that has been set up as described below, connected over the same network.*

  *"Machine that uses ru0 as the RU host name"*  
  *"Machine that uses the IP address by its default (172.16.1.10)"*

  *If such a machine is connected over the same network, disconnect it from the network by powering it OFF or unplugging its I/F cable.*  
  *Unless such a machine is disconnected, the application and configuration data of that machine will be automatically updated as well when the application of the RU is updated.*

**◇ REFERENCE ◇**

*By performing "soft update", the application software and the configuration data of default values are written into the flash ROM.*

## 14.1 Procedures for PC-MUTL Version 1.2 or Later (RU Application A07 or Later)

(1) Make sure that there is no machine that has been set up as described below, connected over the same network.

- Machine that uses ru0 as the RU host name.
- Machine that uses the IP address by its default (172.16.1.10).

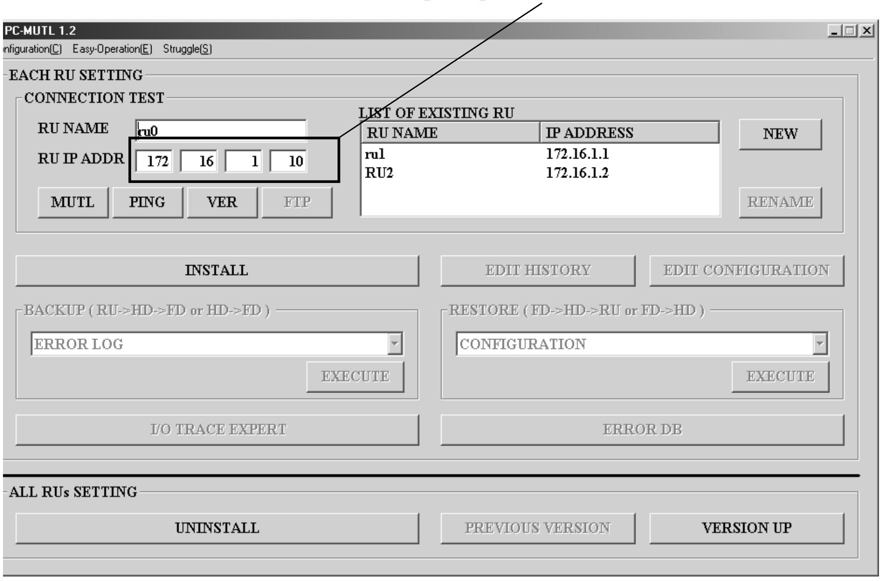
➩ If such a machine is connected, isolate it from the network by powering it OFF or disconnecting its I/F cable.

(2) Set the IP address of the CL to “172.16.1.20” (default value).

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)” in Troubleshooting Volume

(3) Exit the CL software.

(4) Set the IP address of the RU to its default.


#1 [Set] RU IP ADDR “172.16.1.10”

RU NAME: ru0

RU IP ADDR: 172 . 16 . 1 . 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

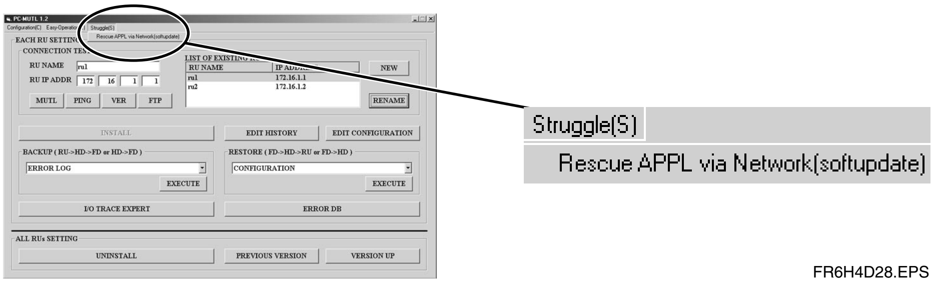
BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG

RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

PC-MUTL 1.2
nfiguration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D75.EPS

(5) [Struggle] → [Rescue APPL via Network (Soft Update)]


PC-MUTL 1.2
Configuration(C)
Easy-Operation
Struggle(S)
Rescue APPL via Network(softupdate)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
LIST OF EXISTING RU
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
Struggle(S)
Rescue APPL via Network(softupdate)

RU NAME: ru1

RU IP ADDR: 172 16 1 1

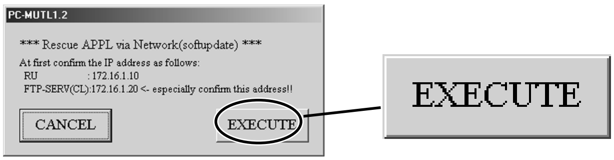
| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

ERROR LOG

CONFIGURATION

FR6H4D28.EPS

(6) After verifying that the RU where soft update is to be performed has been booted, click on the [EXECUTE] button.


PC-MUTL1.2
CANCEL
EXECUTE
EXECUTE

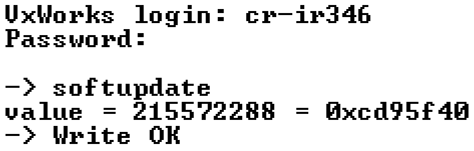
*** Rescue APPL via Network(softupdate) ***

At first confirm the IP address as follows:
RU :172.16.1.10
FTP-SERV(CL):172.16.1.20 <- especially confirm this address!!

FR6H4D74.EPS

The update of the RU application starts.

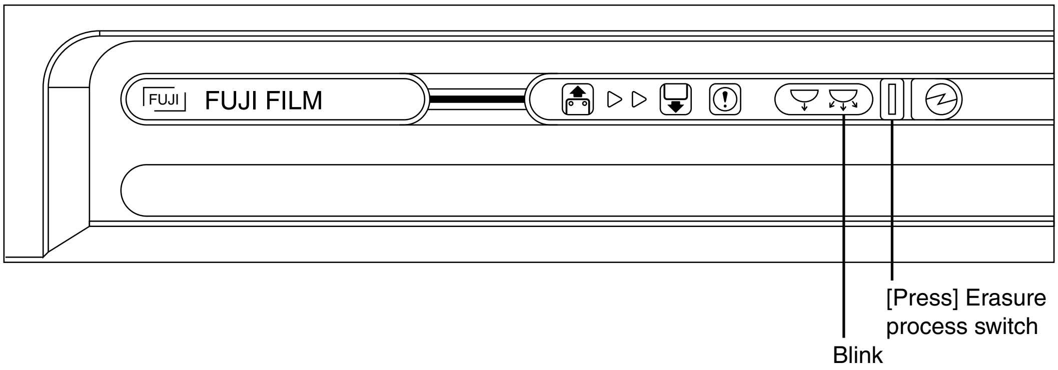
(7) Make sure that "Write OK" appears.



```
VxWorks login: cr-ir346
Password:

-> softupdate
value = 215572288 = 0xcd95f40
-> Write OK
```

FR6H3339.EPS

(8) Turn OFF and then back ON the power switch of the RU, and, at the same time, hold down the erasure process switch until the erasure process indicator blinks.

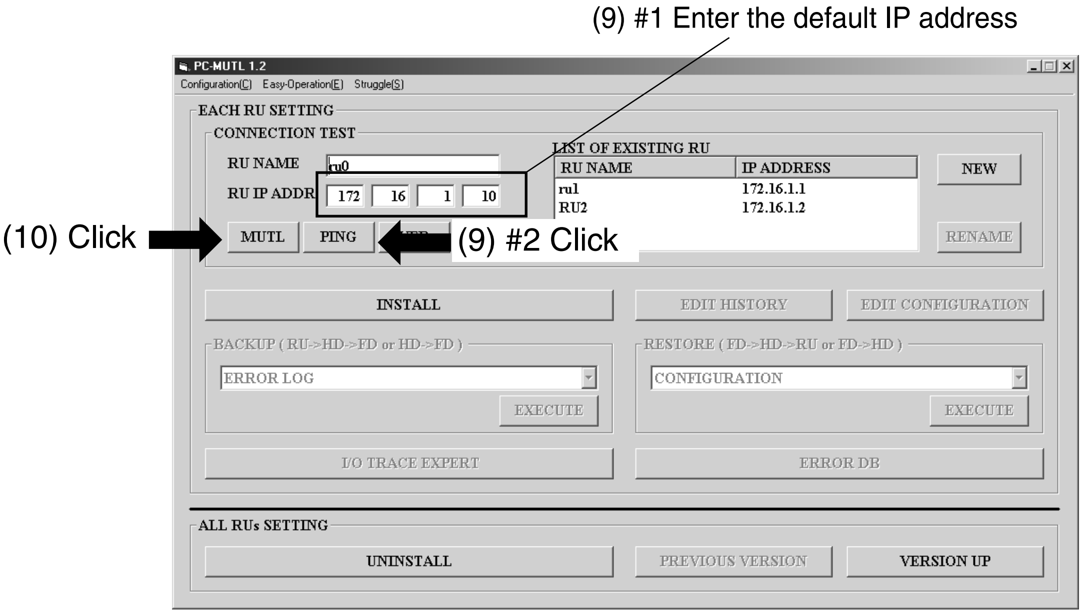

FUJI
FUJI FILM
[Press] Erasure
process switch
Blink

FR6H4D77.EPS

(9) Set the IP address of the RU to its default, and click on the [PING] button.

Referring to the DOS prompt window displayed, make sure that the result is 100% successful.

(10) Click on the [MUTL] button.


(9) #1 Enter the default IP address

(10) Click

(9) #2 Click

RU NAME: ru0

RU IP ADDR: 172 . 16 . 1 . 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D76.EPS

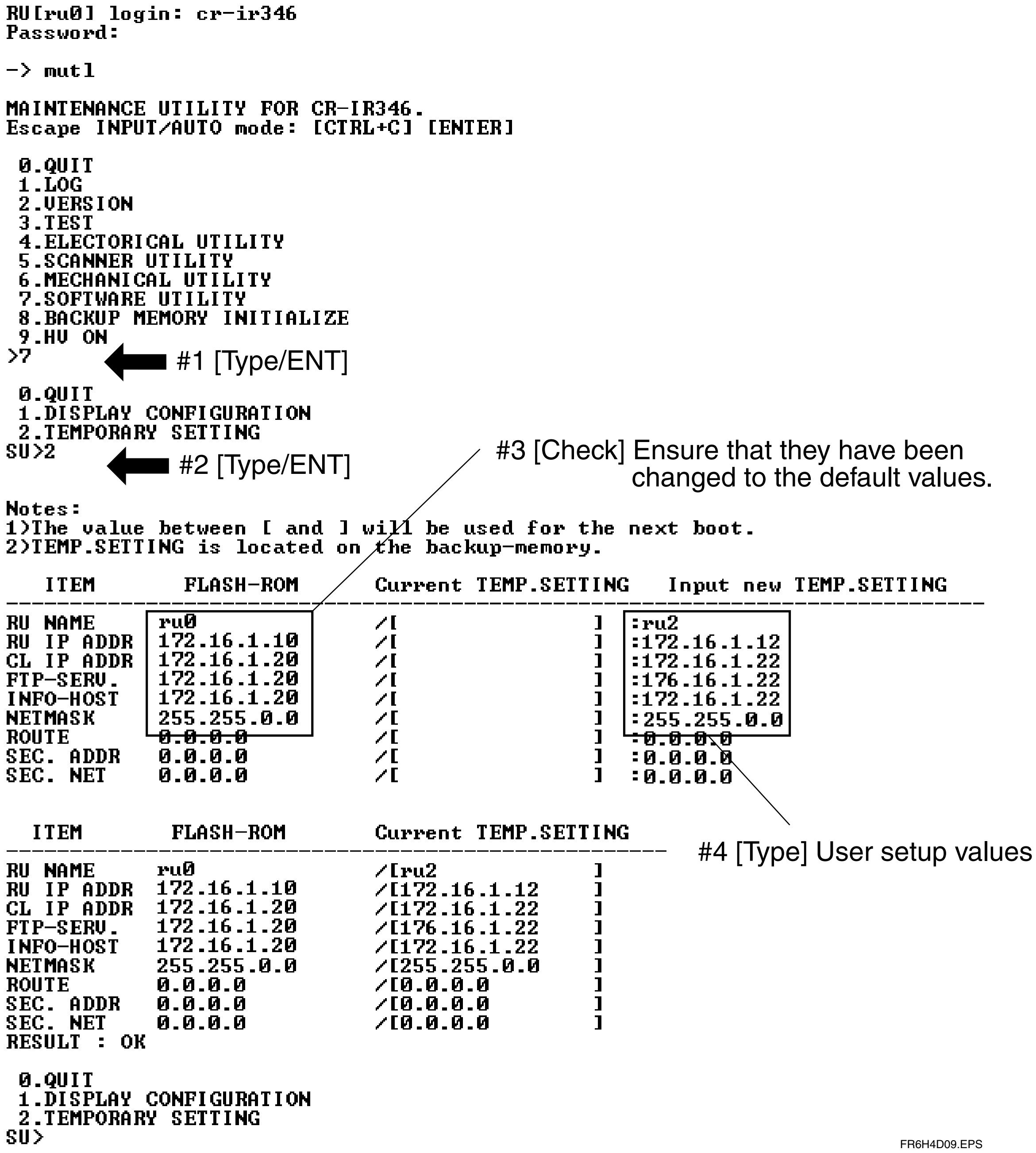
◆ **_NOTE_** ◆

*In an N-to-N connection setup, if the RU software is to be updated, be sure to execute "PING", before version update, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be updated.*

(11) Using TEMPORARY SETTING of SOFTWARE UTILITY, change the following items to the user settings that have been noted before the procedure.

(Example) When the user settings are as shown below:

RUNAME : ru2
RU IP ADDR :172.16.1.12
CL IP ADDR :172.16.1.22
FTP-SERV. :172.16.1.22
INFO-HOST :172.16.1.22



```
RU[ru0] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV ON
>7

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>2

Notes:
1)The value between [ and ] will be used for the next boot.
2)TEMP.SETTING is located on the backup-memory.

   ITEM        FLASH-ROM      Current TEMP.SETTING   Input new TEMP.SETTING
-----------------------------------------------------------------------------
RU NAME     ru0             /[                ]  :ru2
RU IP ADDR  172.16.1.10     /[                ]  :172.16.1.12
CL IP ADDR  172.16.1.20     /[                ]  :172.16.1.22
FTP-SERV.   172.16.1.20     /[                ]  :176.16.1.22
INFO-HOST   172.16.1.20     /[                ]  :172.16.1.22
NETMASK     255.255.0.0     /[                ]  :255.255.0.0
ROUTE       0.0.0.0         /[                ]  :0.0.0.0
SEC. ADDR   0.0.0.0         /[                ]  :0.0.0.0
SEC. NET    0.0.0.0         /[                ]  :0.0.0.0

  ITEM        FLASH-ROM       Current TEMP.SETTING
--------------------------------------------------
RU NAME     ru0             /[ru2             ]
RU IP ADDR  172.16.1.10     /[172.16.1.12     ]
CL IP ADDR  172.16.1.20     /[172.16.1.22     ]
FTP-SERV.   172.16.1.20     /[176.16.1.22     ]
INFO-HOST   172.16.1.20     /[172.16.1.22     ]
NETMASK     255.255.0.0     /[255.255.0.0     ]
ROUTE       0.0.0.0         /[0.0.0.0         ]
SEC. ADDR   0.0.0.0         /[0.0.0.0         ]
SEC. NET    0.0.0.0         /[0.0.0.0         ]
RESULT : OK

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>
```

#1 [Type/ENT]

#2 [Type/ENT]

#3 [Check] Ensure that they have been changed to the default values.

#4 [Type] User setup values

FR6H4D09.EPS

(12) Turn OFF the power switch of the RU and then back ON.

**◆ *NOTE* ◆**

*Unless the power switch of the RU is turned OFF and then back ON, the user settings will not become effective.*

(13) Set the IP address of the CL to the user setup value.

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from Default Setting to User Setting)” in Troubleshooting Volume

(14) Click on **Start** and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

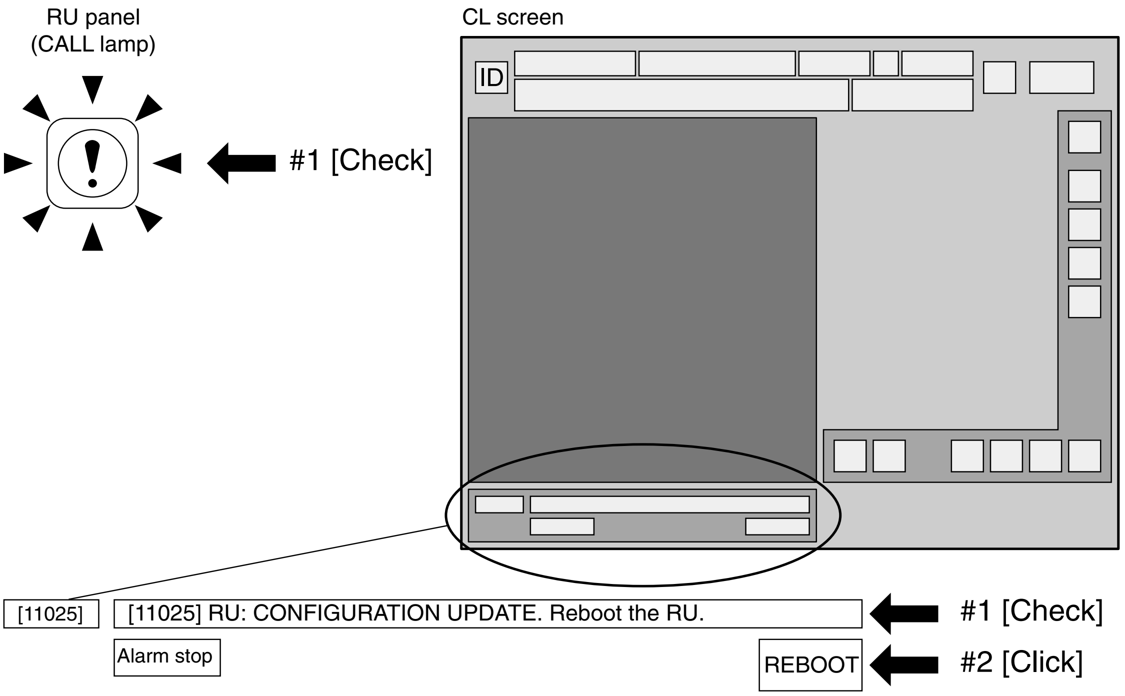
➩ The CL-AP starts up in about one minutes.

A RU boot-up message appears on the monitor of the CL, and after about one minute has passed, the RU becomes ready for operation.

Boot up the CL.

(15) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and reboot the RU from the CL screen, and the RU boots up.

When it is rebooted, all the panel indicators are illuminated, with an audible alarm generated.


RU panel
(CALL lamp)
#1 [Check]
CL screen
ID
[11025]
#1 [Check]
Alarm stop
REBOOT
#2 [Click]

[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

FR6H4D29.EPS

## 14.2 Procedures for PC-MUTL Version 1.1 or Earlier (RU Application A06 or Earlier)

(1) Make sure that there is no machine that has been set up as described below, connected over the same network.

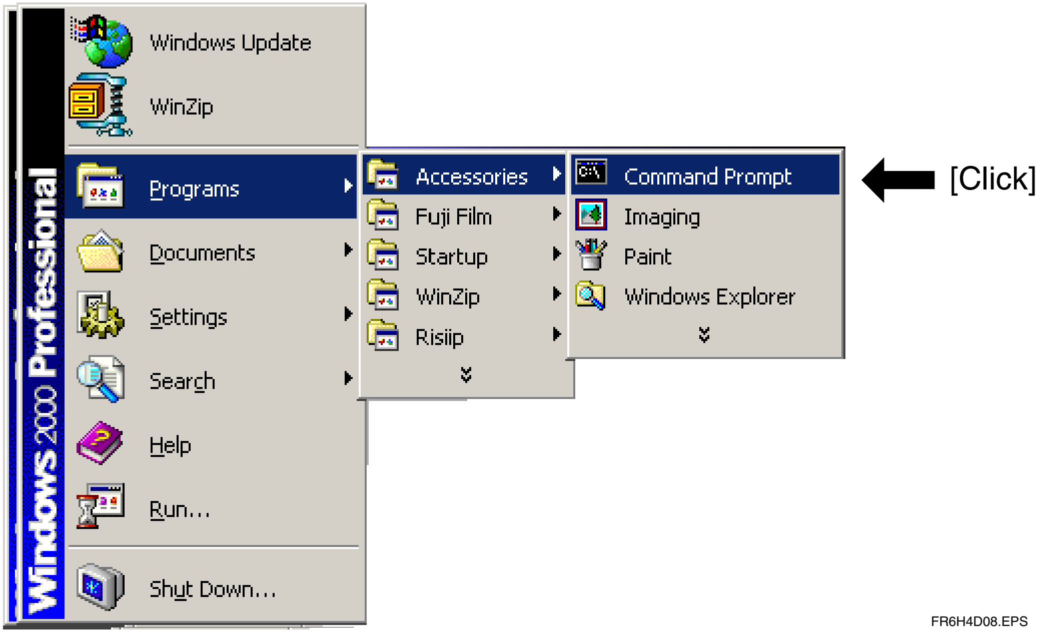
- Machine that uses ru0 as the RU host name.
- Machine that uses the IP address by its default (172.16.1.10).

➪ If such a machine is connected, isolate it from the network by powering it OFF or disconnecting its I/F cable.

(2) Set the IP address of the CL to “172.16.1.20” (default value).

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)” in Troubleshooting Volume

(3) Start “Command Prompt” from the [Start] menu.


Windows Update
WinZip
Programs
Documents
Settings
Search
Help
Run...
Shut Down...
Windows 2000 Professional
Accessories
Fuji Film
Startup
WinZip
Risiip
Command Prompt
Imaging
Paint
Windows Explorer
[Click]

FR6H4D08.EPS

“c:\>” appears on screen.

(4) Type in the IP address of the RU, “telnet 172.16.1.10” (default value).

“Vx works login” appears on screen.

(5) Type in “cr-ir346”.

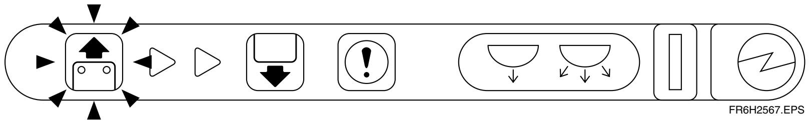
“Password:” appears on screen.

(6) Type in “cr-ir346”.

“->” appears on screen.

(7) Type in “softupdate”.

All the panel indicators on the RU are illuminated for about two minutes (with no audible alarm).

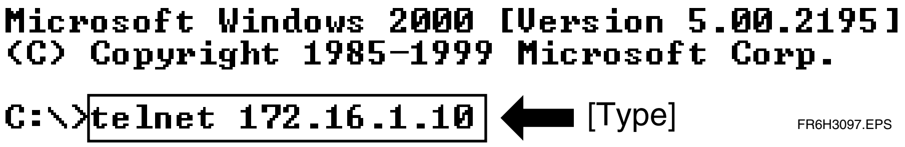


FR6H2567.EPS

### ◇ REFERENCE ◇

*By performing “soft update”, the application software and the configuration data of default values are written into the flash ROM.*

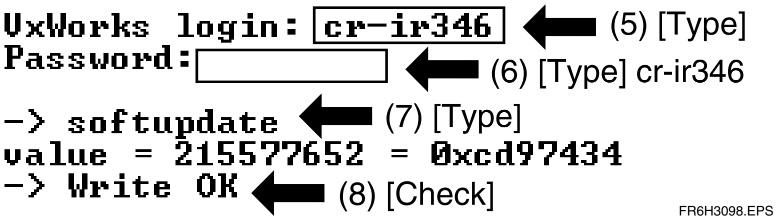
(8) Make sure that “Write OK” appears on screen.



```
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-1999 Microsoft Corp.

C:\>telnet 172.16.1.10
```

[Type]

FR6H3097.EPS



```
VxWorks login: cr-ir346
Password:

-> softupdate
value = 215577652 = 0xcd97434
-> Write OK
```

(5) [Type]

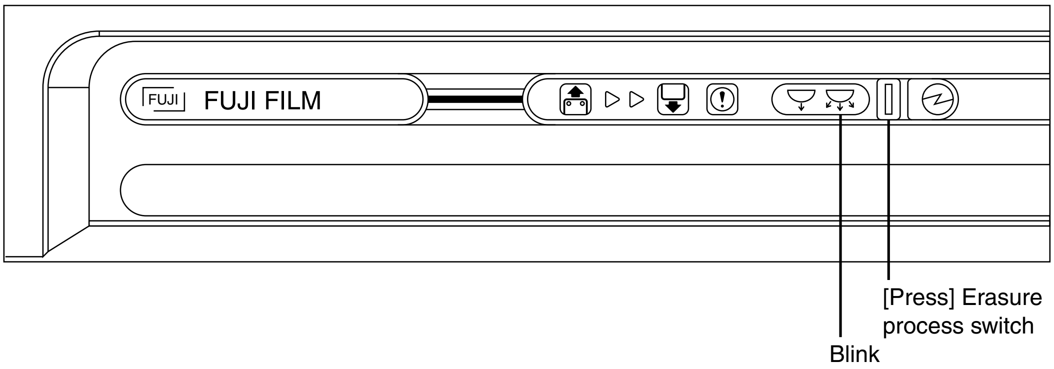
(6) [Type] cr-ir346

(7) [Type]

(8) [Check]

FR6H3098.EPS

(9) Turn OFF and then back ON the power switch of the RU, and, at the same time, hold down the erasure process switch until the erasure process indicator blinks.


FUJI
FUJI FILM
[Press] Erasure process switch
Blink

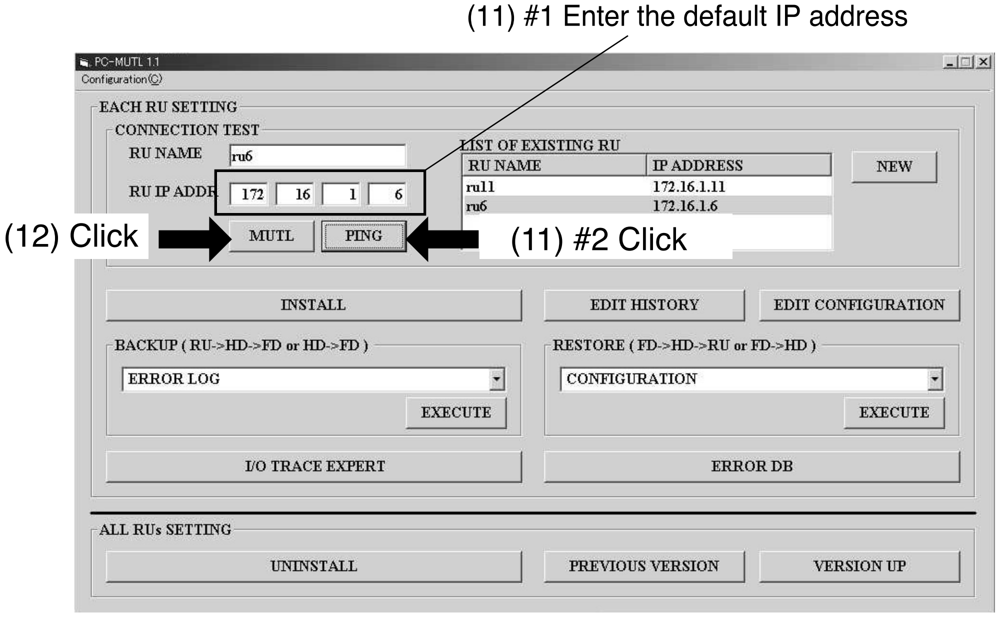
FR6H4D77.EPS

(10) Exit the CL software.

(11) Set the IP address of the RU to its default, and click on the [PING] button.

Referring to the DOS prompt window displayed, make sure that the result is 100% successful.

(12) Click on the [MUTL] button.


(11) #1 Enter the default IP address
(12) Click
(11) #2 Click
PC-MUTL 1.1
Configuration(C)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
LIST OF EXISTING RU
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru6

RU IP ADDR: 172 . 16 . 1 . 6

| RU NAME | IP ADDRESS |
|---|---|
| ru11 | 172.16.1.11 |
| ru6 | 172.16.1.6 |

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

FR6H4D78.EPS

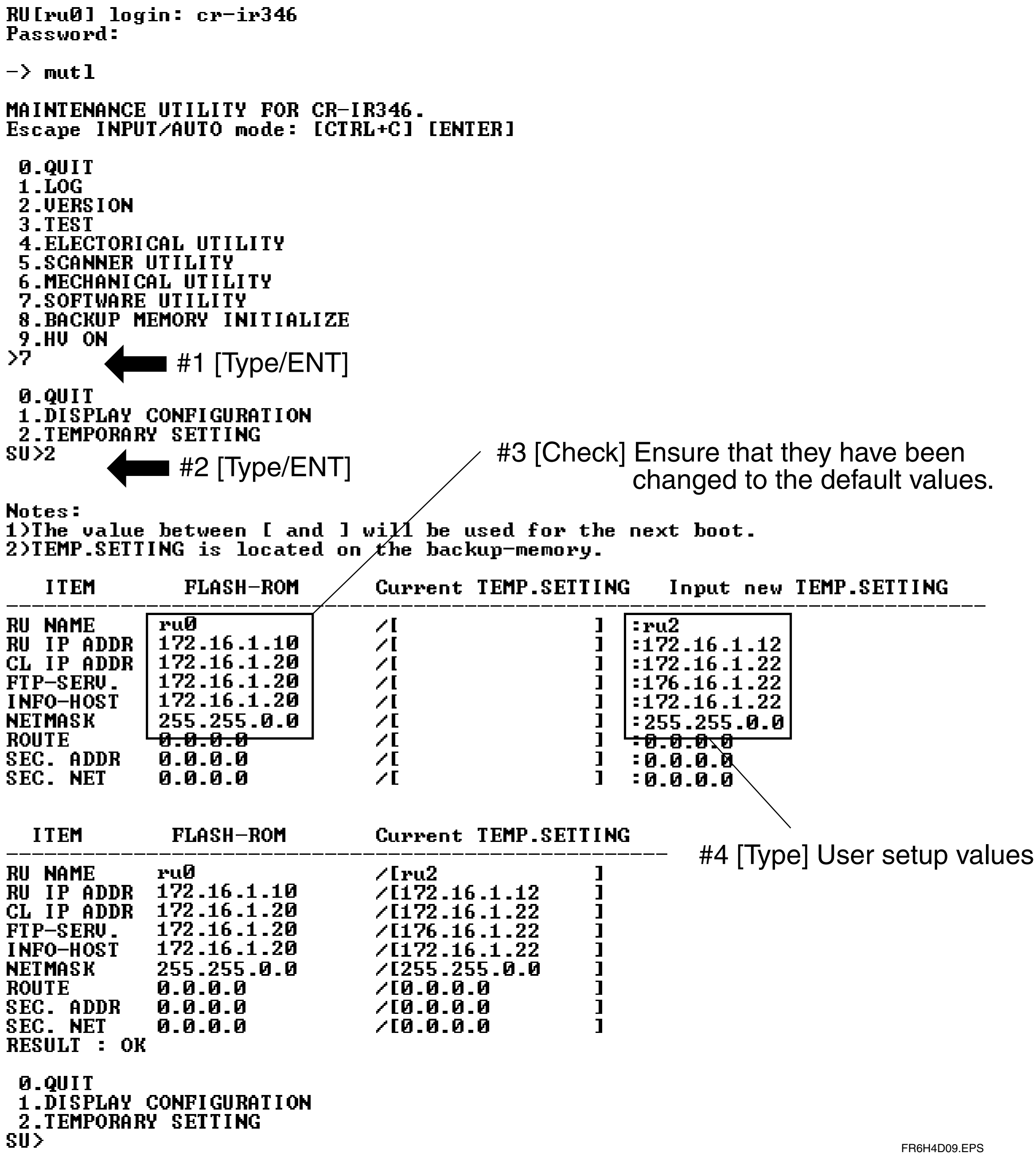
◆ ***NOTE*** ◆

*In an N-to-N connection setup, if the RU software is to be updated, be sure to execute “PING”, before version update, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be updated.*

(13) Using TEMPORARY SETTING of SOFTWARE UTILITY, change the following items to the user settings that have been noted before the procedure.

(Example) When the user settings are as shown below:

RUNAME : ru2
RU IP ADDR :172.16.1.12
CL IP ADDR :172.16.1.22
FTP-SERV. :172.16.1.22
INFO-HOST :172.16.1.22



```
RU[ru0] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV ON
>7

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>2

Notes:
1)The value between [ and ] will be used for the next boot.
2)TEMP.SETTING is located on the backup-memory.

   ITEM        FLASH-ROM      Current TEMP.SETTING   Input new TEMP.SETTING
-----------------------------------------------------------------------------
RU NAME      ru0            /[                ]  :ru2
RU IP ADDR   172.16.1.10    /[                ]  :172.16.1.12
CL IP ADDR   172.16.1.20    /[                ]  :172.16.1.22
FTP-SERV.    172.16.1.20    /[                ]  :176.16.1.22
INFO-HOST    172.16.1.20    /[                ]  :172.16.1.22
NETMASK      255.255.0.0    /[                ]  :255.255.0.0
ROUTE        0.0.0.0        /[                ]  :0.0.0.0
SEC. ADDR    0.0.0.0        /[                ]  :0.0.0.0
SEC. NET     0.0.0.0        /[                ]  :0.0.0.0

  ITEM        FLASH-ROM       Current TEMP.SETTING
----------------------------------------------------
RU NAME      ru0             /[ru2             ]
RU IP ADDR   172.16.1.10     /[172.16.1.12     ]
CL IP ADDR   172.16.1.20     /[172.16.1.22     ]
FTP-SERV.    172.16.1.20     /[176.16.1.22     ]
INFO-HOST    172.16.1.20     /[172.16.1.22     ]
NETMASK      255.255.0.0     /[255.255.0.0     ]
ROUTE        0.0.0.0         /[0.0.0.0         ]
SEC. ADDR    0.0.0.0         /[0.0.0.0         ]
SEC. NET     0.0.0.0         /[0.0.0.0         ]
RESULT : OK

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>
```

#1 [Type/ENT]

#2 [Type/ENT]

#3 [Check] Ensure that they have been changed to the default values.

#4 [Type] User setup values

FR6H4D09.EPS

(14) Turn OFF the power switch of the RU and then back ON.

**◆ *NOTE* ◆**

*Unless the power switch of the RU is turned OFF and then back ON, the user settings will not become effective.*

(15) Set the IP address of the CL to the user setup value.

☞ "7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from Default Setting to User Setting)" in Troubleshooting Volume

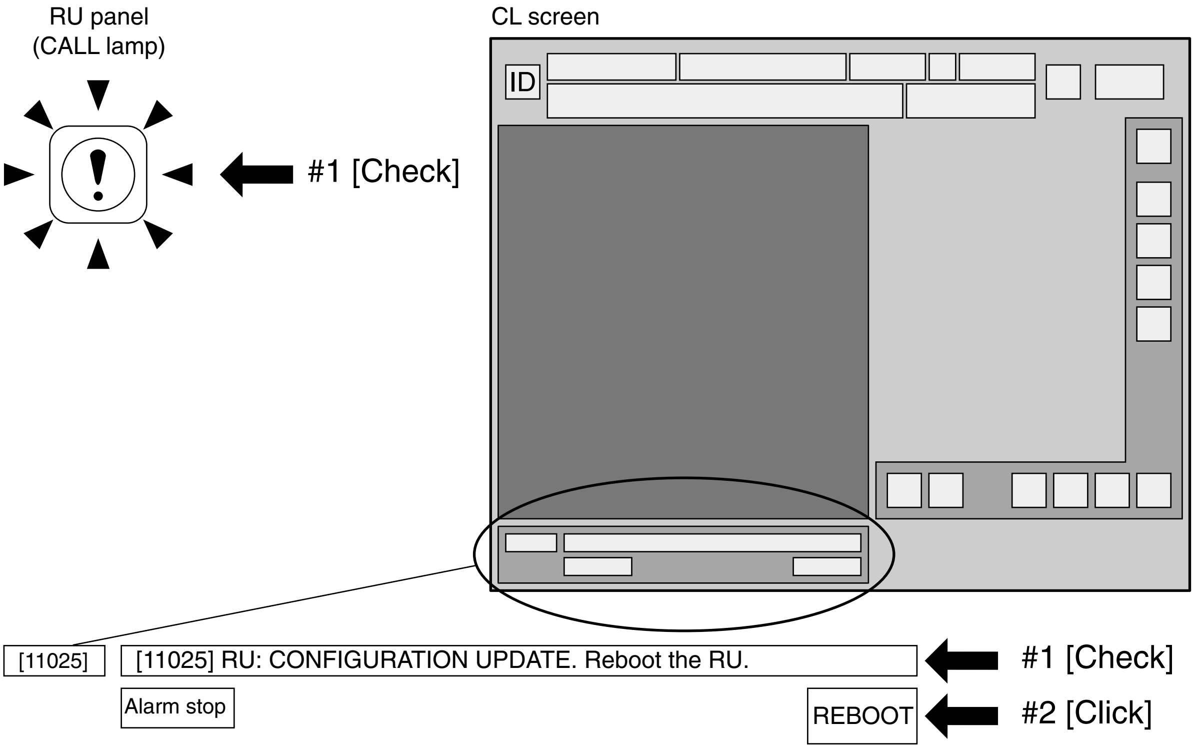
(16) Click on Start and then sequentially choose "Programs", "Fuji Film", and "FCR".

➩ The CL-AP starts up in about one minutes.

A RU boot-up message appears on the monitor of the CL, and after about one minute has passed, the RU becomes ready for operation.

(17) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and reboot the RU from the CL screen, and the RU boots up.

When it is rebooted, all the panel indicators are illuminated, with an audible alarm generated.



[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

FR6H4D29.EPS

# CR-IR346RU Service Manual

## Maintenance Utility (MU)

# CR-IR346RU Service Manual – Contents

## Maintenance Utility (MU)

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[1-2-3] CLEAR ALL TRACE LOGS ........ MU-80
[2] VERSION ........ MU-81
[2-1] DISPLAY VERSION ........ MU-82
[2-2] DETAIL ........ MU-83
[2-2-1] LOAD SOFTWARE FROM FTP-SERV. ........ MU-83
[2-2-2] LOAD CONFIGURATION FROM FTP-SERV ........ MU-84
[2-2-3] COMPARE SOFTWARE WITH FTP-SERV ........ MU-84
[3] TEST ........ MU-85
[3-1] ROUTINE ........ MU-86
[3-1-1] READING & ERASURE ........ MU-86
[3-1-2] PRIMARY ERASURE ........ MU-87
[3-1-3] SECONDARY ERASURE ........ MU-87
[3-1-4] MONITOR READING & ERASURE ........ MU-88
[3-2] AUTO MODE ........ MU-89
[3-2-1] READING & ERASURE ........ MU-89
[3-2-2] PRIMARY ERASURE ........ MU-90
[3-2-3] SECONDARY ERASURE ........ MU-90
[3-3] SCANNER CLEANING ........ MU-91
[3-4] NETWORK ........ MU-92
[3-4-1] PING (AUTO) ........ MU-92
[3-4-2] PING (MANUAL) ........ MU-92
[3-4-3] DISPLAY FTP-SERV ........ MU-92

[4] ELECTRICAL UTILITY ........ MU-93
[4-1] AUTO MODE ........ MU-94
[4-1-1] ALL ........ MU-95
[4-1-2] CPU12A ........ MU-95
[4-1-3] SCN12A ........ MU-96
[4-1-4] INV12A ........ MU-96
[4-1-5] SND12A ........ MU-97
[4-1-6] SUB CPU ........ MU-98
[4-2] BOARD TEST ........ MU-99
[4-2-1] CPU12A ........ MU-99
[4-2-2] SCN12A ........ MU-100
[4-2-3] SND12A ........ MU-100
[4-2-4] INV12A ........ MU-101
[4-3] SUB CPU TEST ........ MU-101
[4-3-1] SDRAM TEST ........ MU-101
[4-3-2] FIFO TEST ........ MU-101
[4-3-3] OUTPUT PATTERN IMAGE ........ MU-102
[4-3-4] RE-OUTPUT IMAGE ........ MU-106
[4-4] POWER SUPPLY MONITOR ........ MU-107
[4-5] DISPLAY HARDWARE SWITCH ........ MU-108
[4-6] BARCODE TEST ........ MU-109
[4-6-1] COMMUNICATION ........ MU-109
[4-6-2] READ TEST ........ MU-110

[5] SCANNER UTILITY ........ MU-112
[5-1] INITIALIZE ........ MU-113
[5-2] POLYGON ........ MU-114
[5-3] LASER ........ MU-115
[5-4] SAVE INITIAL LDIF ........ MU-116
[5-4-1] GET DATA FROM SCN, SAVE TO RAM & FLASH & FTP-SERV ........ MU-116
[5-4-2] SAVE DEFAULT DATA TO RAM & FLASH & FTP-SERV ........ MU-116
[5-5] HV STATUS ........ MU-117
[5-6] HV ON/OFF ........ MU-118
[5-7] HV DATA ........ MU-119
[5-8] FORMAT ........ MU-120
[5-8-1] DEFAULT ........ MU-121
[5-8-2] FREQ ADJUST ........ MU-122
[5-8-3] PIXEL ADJUST ........ MU-124
[5-8-4] OPTIC FORMAT ........ MU-126
[5-9] SHADING/SENSITIVITY ........ MU-127
[5-9-1] SHADING/POLYGON CORRECTION ........ MU-127
[5-9-2] CALCULATION ........ MU-128
[5-9-3] SENSITIVITY DATA ........ MU-129
[5-9-4] HV DATA ........ MU-130
[5-9-5] PMT DATA ........ MU-130
[5-10] DATA MANAGEMENT ........ MU-131
[5-10-1] SAVE SCN DATA FROM RAM TO FLASH & FTP-SERV ........ MU-131
[5-10-2] LOAD SCN DATA FROM FTP-SERV TO RAM & FLASH ........ MU-131
[5-10-3] DISPLAY SCN DATA ETC ........ MU-131
[5-11] DIAGNOSTIC ........ MU-132
[5-12] VIRTUAL IMAGE ........ MU-133
[5-12-1] LIGHT ........ MU-136
[5-12-2] LOG AMP ........ MU-136
[5-12-3] SCN12A INPUT ........ MU-136

[6] MECHANICAL UTILITY ........ MU-137
    [6-1] MOTOR ........ MU-137
    [6-1-1] Parameter setup (For version A02 through A04) ........ MU-138
    [6-1-1] Motor drive and stop (For A05 or later) ........ MU-140
    [6-1-2] Motor drive (for version A02 through A04) ........ MU-141
    [6-1-2] Parameter setup (for version A05) ........ MU-141
    [6-1-3] Motor stop (for version A02 through A04) ........ MU-142
    [6-1-3] Parameter initialization (for version A05) ........ MU-142
    [6-1-4] Parameter initialization (for version A02 through A04) ........ MU-143
    [6-2] ACTUATOR ........ MU-144
    [6-2-1] Actuator drive ........ MU-146
    [6-3] SENSOR ........ MU-148
    [6-3-1] Individual sensor monitoring ........ MU-150
    [6-3-2] Overall sensor monitoring ........ MU-151
    [6-3-3] REAL-TIME MONITOR ALL ........ MU-152
    [6-4] UNIT ........ MU-154
    [6-4-1] IP feed/load operation checkout ........ MU-155
    [6-4-2] Side-positioning grip operation checkout ........ MU-156
    [6-4-3] Side-positioning operation checkout ........ MU-157
    [6-4-4] Subscanning grip operation checkout ........ MU-158
    [6-4-5] Subscanning read operation checkout ........ MU-159
    [6-4-6] IP conveyance operation checkout ........ MU-160
    [6-4-7] SCANNER CLEANING (MZ3) ........ MU-163
[7] SOFTWARE UTILITY ........ MU-165
    [7-1] DISPLAY CONFIGURATION ........ MU-165
    [7-2] TEMPORARY SETTING ........ MU-167
[8] BACKUP MEMORY ........ MU-169
[9] HV ON/HV OFF ........ MU-170

## Control Sheet

| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10/10/2000 | 00 | New release (FM2887) | All pages |
| 08/30/2001 | 01 | Revisions associated with release of version A05 (FM3058) | All pages |
| 02/20/2002 | 05 | Revisions associated with release of version A07 (FM3328) | All pages |

# 1. Overview of RU Service Utility

## 1.1 Features

### ■ Improved Ease of Maintenance

Ease of maintenance is improved in the following points, as compared to the FCR5000 Series.

● Simplified software installations and version updates

Because of the GUI (graphical user interface) installer, software installations and version updates are simplified.

Configuration settings that must be made during installation are also stripped down to a minimum needed.

● Addition of self-diagnostics function for each board

Because self-diagnostic function is added for each board, it is easy to isolate any defective board.

Furthermore, all diagnostics items may be executed repeatedly, so that self-diagnostics can be performed for the board under its loaded condition.

● Enhanced functionality for mechanical utility

Because conveyance tests can be conducted while tracing changes in the I/O status, a point of defect or failure for mechanical control may be readily identified.

Additionally, parameters are preset for commands that activate the motors, so that operation tests can be conducted by selecting the “DRIVE” menu.

# 1.2 Starting and Exiting the M-Utility

**CAUTIONS**

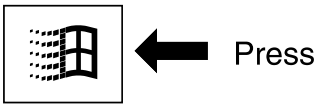
- *The M-Utility must be activated after routine conveyance is completed.*
- *After exiting the M-Utility, be sure to reboot the machine. If the machine is not rebooted, the operation of routine conveyance may not be performed normally.*
- *Before starting the M-Utility, quit all the application software programs running on the CL.*

## ■ Starting the M-Utility

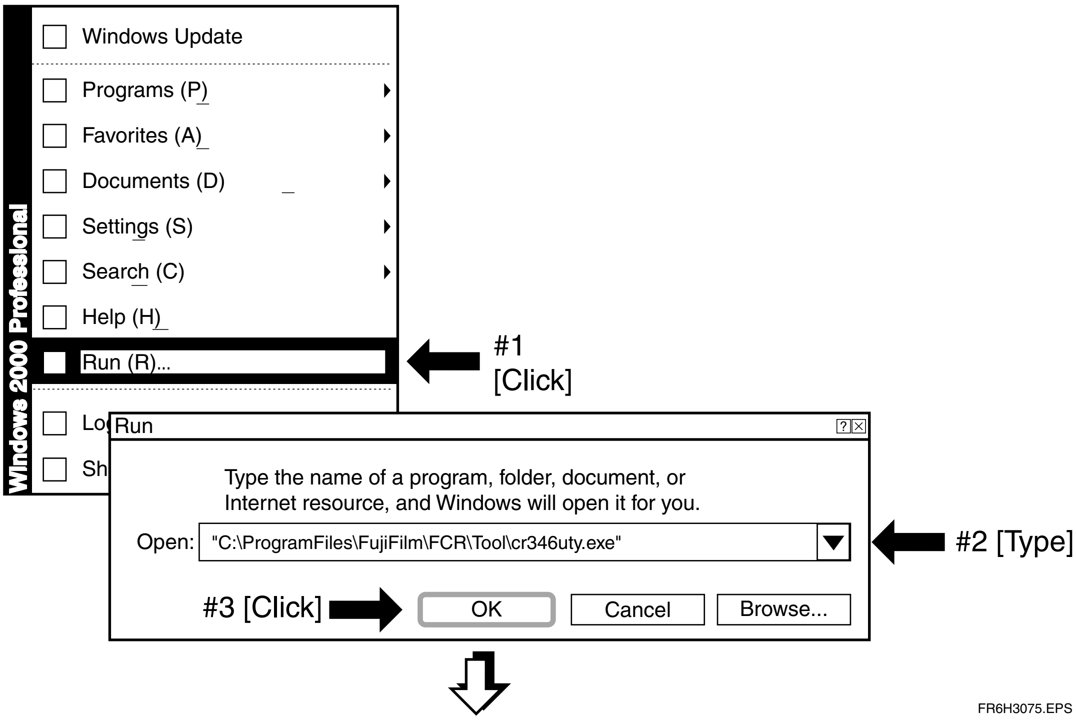
(1) Power ON the RU and CL.

(2) Exit the CL software.

(3) Press the [Windows] key to open the Start menu of Windows.



(4) Select [Run...] from the Start menu of Windows, and type ["C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"] to open the MAINTENANCE UTILITY.


Windows 2000 Professional
☐ Windows Update
☐ Programs (P)
☐ Favorites (A)
☐ Documents (D)
☐ Settings (S)
☐ Search (C)
☐ Help (H)
☐ Run (R)...
☐ Lo
☐ Sh
#1
[Click]
Run
#2 [Type]
#3 [Click]
OK
Cancel
Browse...

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: "C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"

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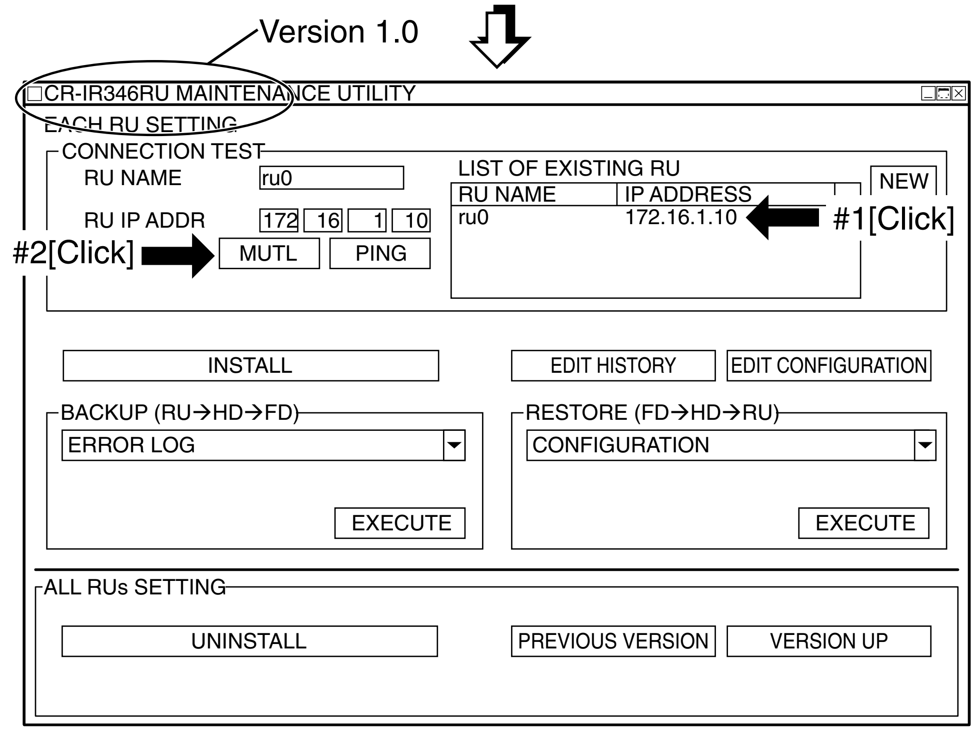
## ◇ *REFERENCE* ◇

*Each version of the PC-MUTL corresponds to each version of the RU software, as follows.*
- *RU software version A01 to A04: PC-MUTL version 1.0*
- *RU software version A05 to A06: PC-MUTL version 1.1*
- *RU software version A07 or later: PC-MUTL version 1.2*

(5) Start the M-Utility.

● For RU software version A01 to A04 (PC-MUTL version 1.0)


Version 1.0
CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
#1[Click]
#2[Click]
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU→HD→FD)
RESTORE (FD→HD→RU)
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru0
RU IP ADDR: 172 . 16 . 1 . 10

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU→HD→FD): ERROR LOG
RESTORE (FD→HD→RU): CONFIGURATION

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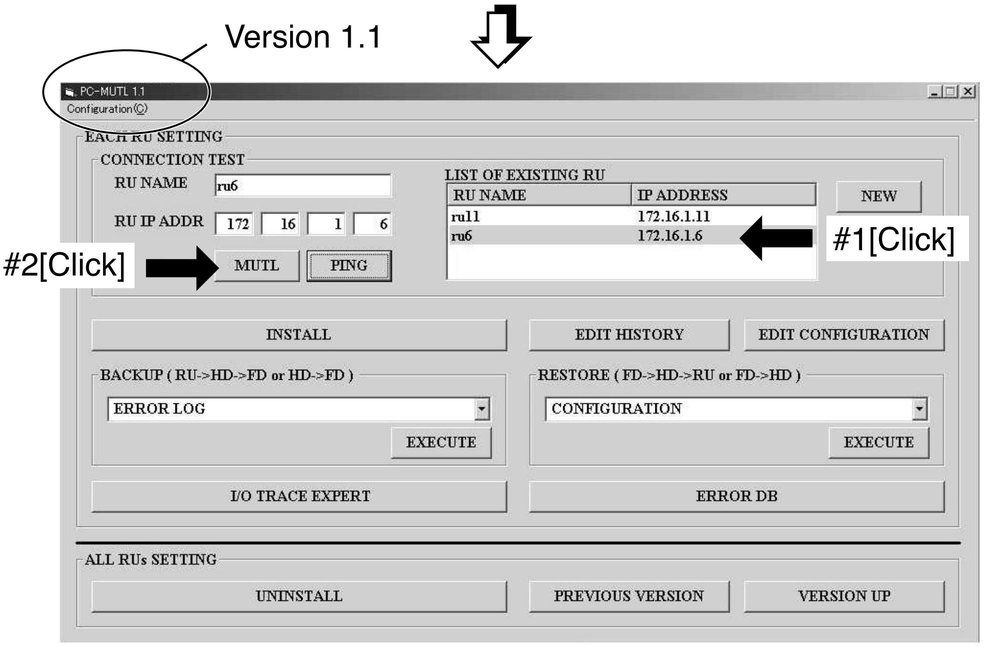
● For RU software version A05 to A06 (PC-MUTL version 1.1)


Version 1.1
PC-MUTL 1.1
Configuration(C)
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
#1[Click]
#2[Click]
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru6
RU IP ADDR: 172 . 16 . 1 . 6

| RU NAME | IP ADDRESS |
|---|---|
| ru11 | 172.16.1.11 |
| ru6 | 172.16.1.6 |

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

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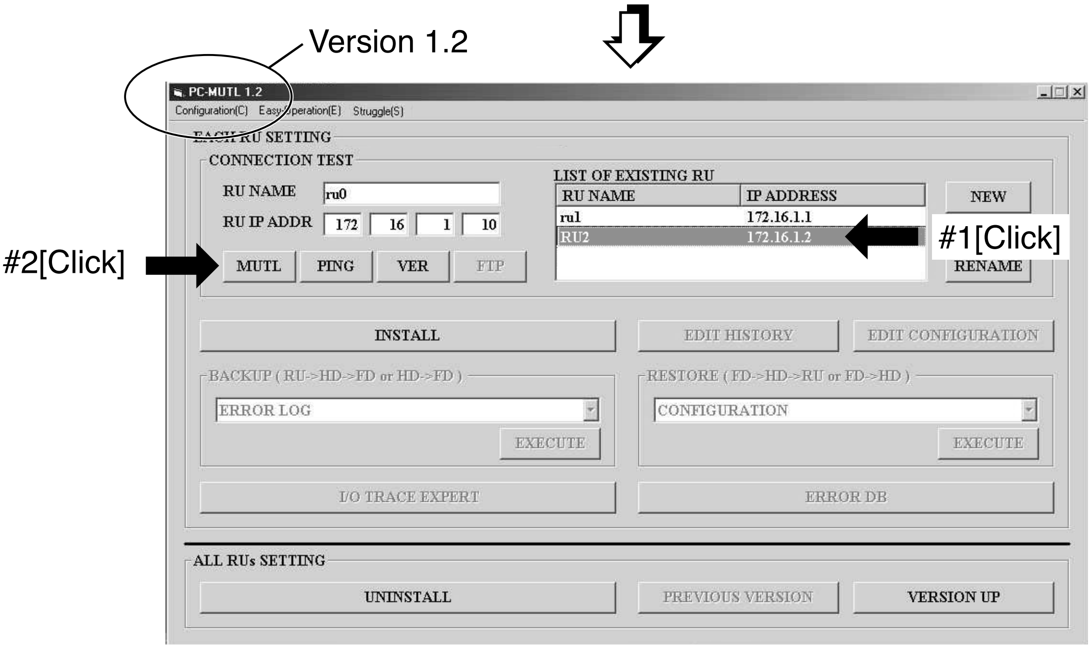
- For RU software version A07 or later (PC-MUTL version 1.2)


Version 1.2
#2[Click]
#1[Click]
PC-MUTL 1.2
Configuration(C) Easy operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
LIST OF EXISTING RU
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru0

RU IP ADDR: 172 . 16 . 1 . 10

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

ERROR LOG

CONFIGURATION

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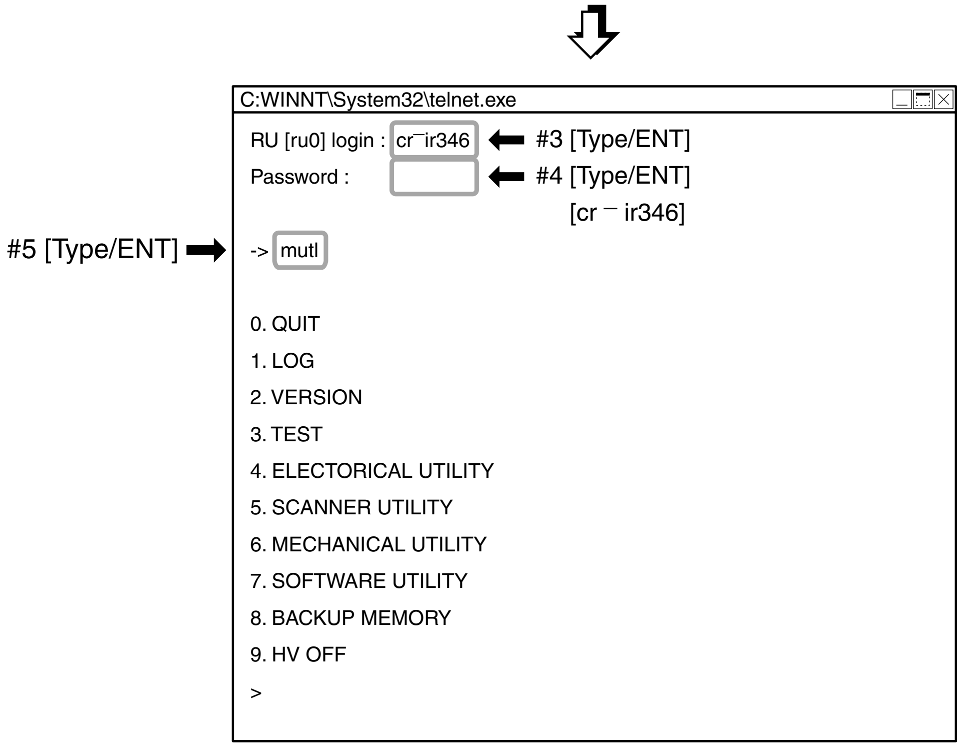
- Common to all RU software versions


C:WINNT\System32\telnet.exe
#3 [Type/ENT]
#4 [Type/ENT]
[cr – ir346]
#5 [Type/ENT]

```
RU [ru0] login : cr-ir346
Password :

-> mutl

0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTORICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
>
```

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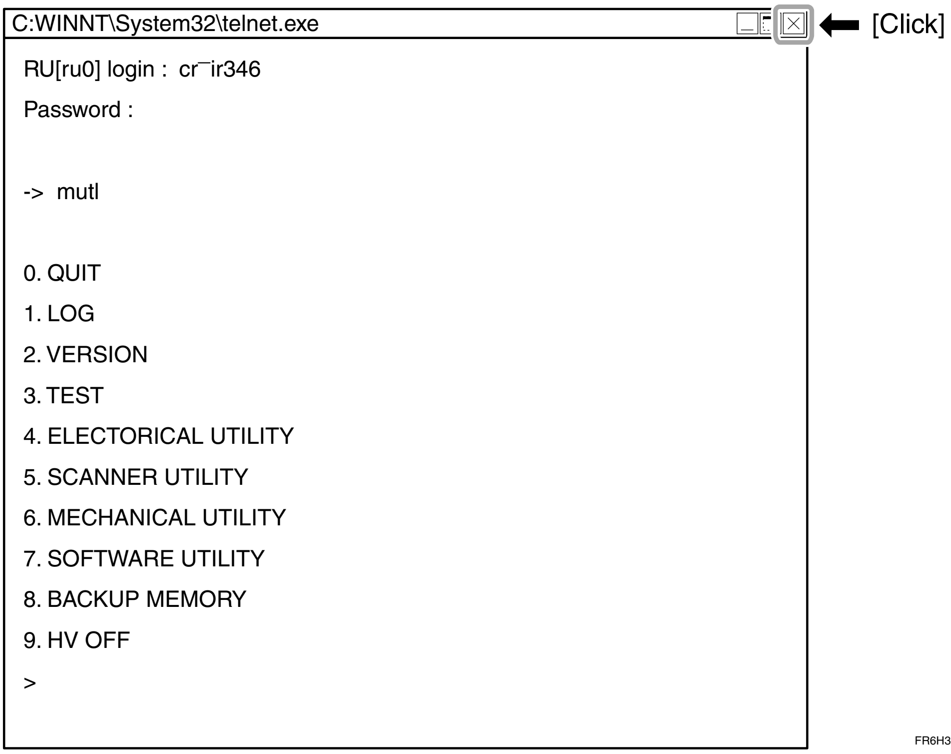
### ◇ *REFERENCES* ◇

- *In the field of “RU[ru0] login:”, “cr-ir346” should be entered within 15 seconds. If 15 seconds have elapsed, the system returns to the “RU MAINTENANCE UTILITY” window.*
- *After having entered the “RU[ru0] login:” field, enter “Password:” within 15 seconds. If 15 seconds have passed, the system returns to the MAINTENANCE UTILITY window.*

## ■ Exiting the M-Utility

(1) Close the DOS prompt window.



```
RU[ru0] login :  cr‾ir346
Password :


->  mutl


0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTORICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
>
```

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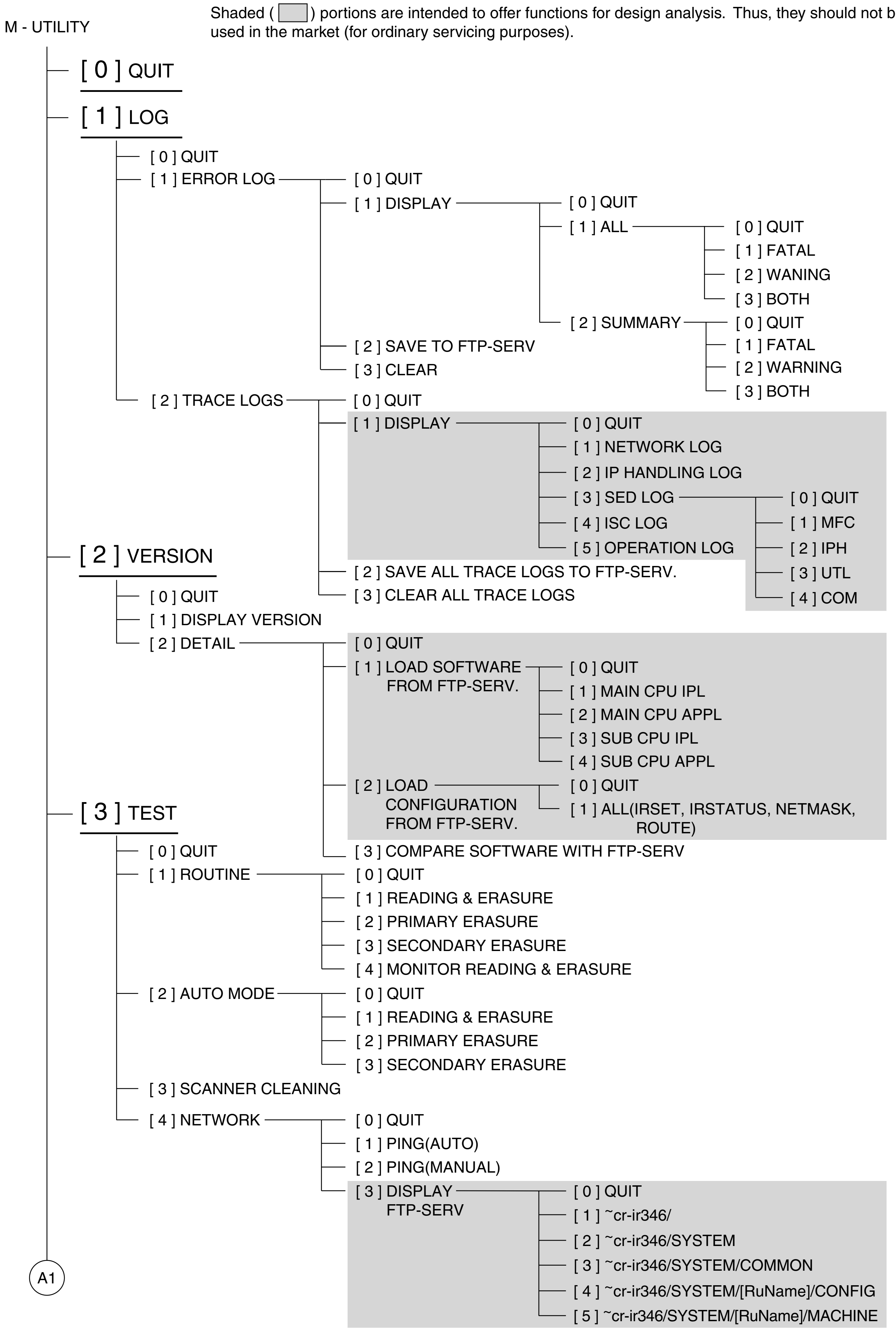
(2) Power OFF the RU.

## 1.3 Maintenance Utility Command Tree Diagram

Shaded ( ▨ ) portions are intended to offer functions for design analysis. Thus, they should not be used in the market (for ordinary servicing purposes).


M - UTILITY
[ 0 ] QUIT
[ 1 ] LOG
  [ 0 ] QUIT
  [ 1 ] ERROR LOG
    [ 0 ] QUIT
    [ 1 ] DISPLAY
      [ 0 ] QUIT
      [ 1 ] ALL
        [ 0 ] QUIT
        [ 1 ] FATAL
        [ 2 ] WANING
        [ 3 ] BOTH
      [ 2 ] SUMMARY
        [ 0 ] QUIT
        [ 1 ] FATAL
        [ 2 ] WARNING
        [ 3 ] BOTH
    [ 2 ] SAVE TO FTP-SERV
    [ 3 ] CLEAR
  [ 2 ] TRACE LOGS
    [ 0 ] QUIT
    [ 1 ] DISPLAY
      [ 0 ] QUIT
      [ 1 ] NETWORK LOG
      [ 2 ] IP HANDLING LOG
      [ 3 ] SED LOG
        [ 0 ] QUIT
        [ 1 ] MFC
        [ 2 ] IPH
        [ 3 ] UTL
        [ 4 ] COM
      [ 4 ] ISC LOG
      [ 5 ] OPERATION LOG
    [ 2 ] SAVE ALL TRACE LOGS TO FTP-SERV.
    [ 3 ] CLEAR ALL TRACE LOGS
[ 2 ] VERSION
  [ 0 ] QUIT
  [ 1 ] DISPLAY VERSION
  [ 2 ] DETAIL
    [ 0 ] QUIT
    [ 1 ] LOAD SOFTWARE FROM FTP-SERV.
      [ 0 ] QUIT
      [ 1 ] MAIN CPU IPL
      [ 2 ] MAIN CPU APPL
      [ 3 ] SUB CPU IPL
      [ 4 ] SUB CPU APPL
    [ 2 ] LOAD CONFIGURATION FROM FTP-SERV.
      [ 0 ] QUIT
      [ 1 ] ALL(IRSET, IRSTATUS, NETMASK, ROUTE)
    [ 3 ] COMPARE SOFTWARE WITH FTP-SERV
[ 3 ] TEST
  [ 0 ] QUIT
  [ 1 ] ROUTINE
    [ 0 ] QUIT
    [ 1 ] READING & ERASURE
    [ 2 ] PRIMARY ERASURE
    [ 3 ] SECONDARY ERASURE
    [ 4 ] MONITOR READING & ERASURE
  [ 2 ] AUTO MODE
    [ 0 ] QUIT
    [ 1 ] READING & ERASURE
    [ 2 ] PRIMARY ERASURE
    [ 3 ] SECONDARY ERASURE
  [ 3 ] SCANNER CLEANING
  [ 4 ] NETWORK
    [ 0 ] QUIT
    [ 1 ] PING(AUTO)
    [ 2 ] PING(MANUAL)
    [ 3 ] DISPLAY FTP-SERV
      [ 0 ] QUIT
      [ 1 ] ~cr-ir346/
      [ 2 ] ~cr-ir346/SYSTEM
      [ 3 ] ~cr-ir346/SYSTEM/COMMON
      [ 4 ] ~cr-ir346/SYSTEM/[RuName]/CONFIG
      [ 5 ] ~cr-ir346/SYSTEM/[RuName]/MACHINE
A1

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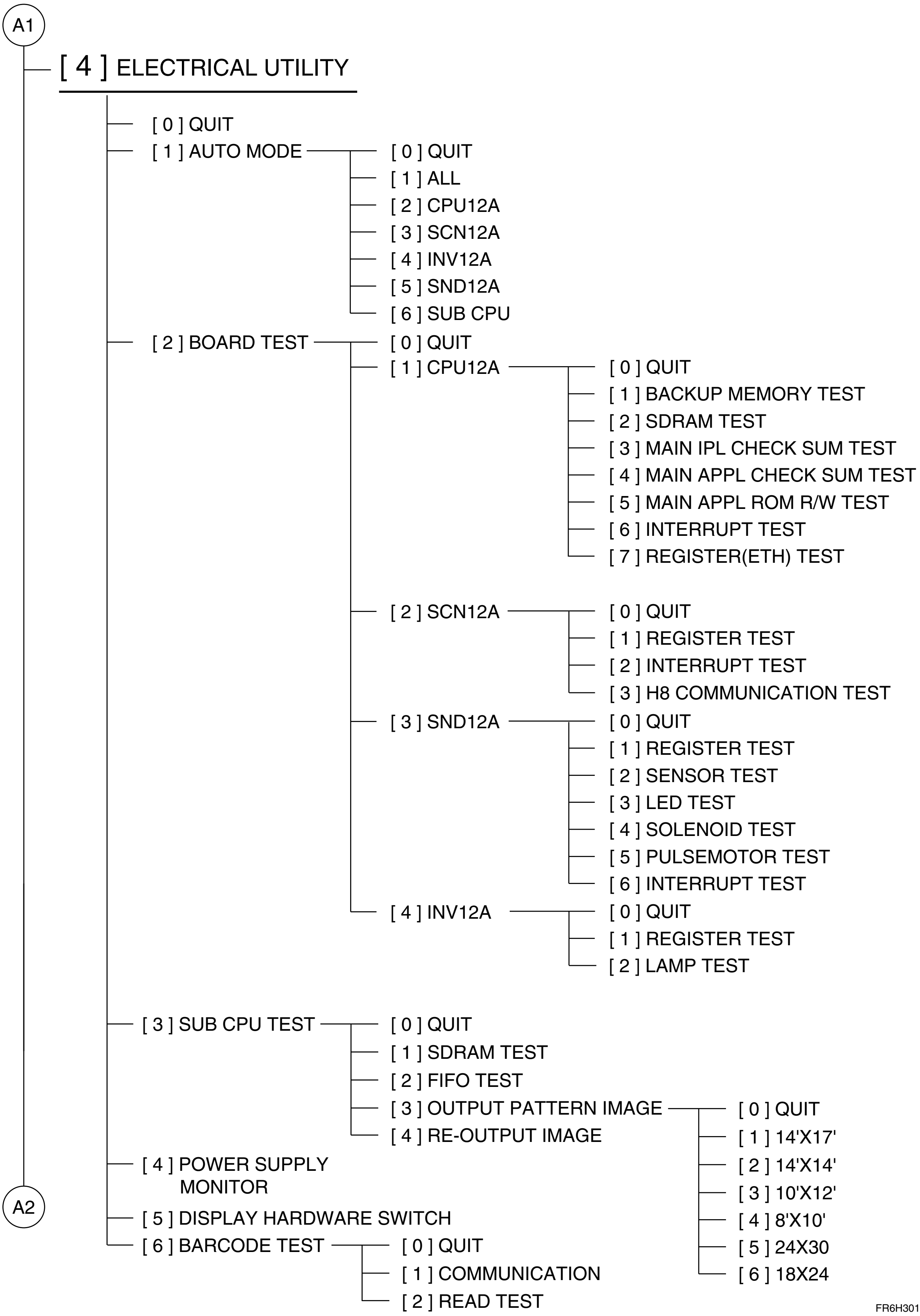

- [ 4 ] ELECTRICAL UTILITY
  - [ 0 ] QUIT
  - [ 1 ] AUTO MODE
    - [ 0 ] QUIT
    - [ 1 ] ALL
    - [ 2 ] CPU12A
    - [ 3 ] SCN12A
    - [ 4 ] INV12A
    - [ 5 ] SND12A
    - [ 6 ] SUB CPU
  - [ 2 ] BOARD TEST
    - [ 0 ] QUIT
    - [ 1 ] CPU12A
      - [ 0 ] QUIT
      - [ 1 ] BACKUP MEMORY TEST
      - [ 2 ] SDRAM TEST
      - [ 3 ] MAIN IPL CHECK SUM TEST
      - [ 4 ] MAIN APPL CHECK SUM TEST
      - [ 5 ] MAIN APPL ROM R/W TEST
      - [ 6 ] INTERRUPT TEST
      - [ 7 ] REGISTER(ETH) TEST
    - [ 2 ] SCN12A
      - [ 0 ] QUIT
      - [ 1 ] REGISTER TEST
      - [ 2 ] INTERRUPT TEST
      - [ 3 ] H8 COMMUNICATION TEST
    - [ 3 ] SND12A
      - [ 0 ] QUIT
      - [ 1 ] REGISTER TEST
      - [ 2 ] SENSOR TEST
      - [ 3 ] LED TEST
      - [ 4 ] SOLENOID TEST
      - [ 5 ] PULSEMOTOR TEST
      - [ 6 ] INTERRUPT TEST
    - [ 4 ] INV12A
      - [ 0 ] QUIT
      - [ 1 ] REGISTER TEST
      - [ 2 ] LAMP TEST
  - [ 3 ] SUB CPU TEST
    - [ 0 ] QUIT
    - [ 1 ] SDRAM TEST
    - [ 2 ] FIFO TEST
    - [ 3 ] OUTPUT PATTERN IMAGE
      - [ 0 ] QUIT
      - [ 1 ] 14'X17'
      - [ 2 ] 14'X14'
      - [ 3 ] 10'X12'
      - [ 4 ] 8'X10'
      - [ 5 ] 24X30
      - [ 6 ] 18X24
    - [ 4 ] RE-OUTPUT IMAGE
  - [ 4 ] POWER SUPPLY MONITOR
  - [ 5 ] DISPLAY HARDWARE SWITCH
  - [ 6 ] BARCODE TEST
    - [ 0 ] QUIT
    - [ 1 ] COMMUNICATION
    - [ 2 ] READ TEST

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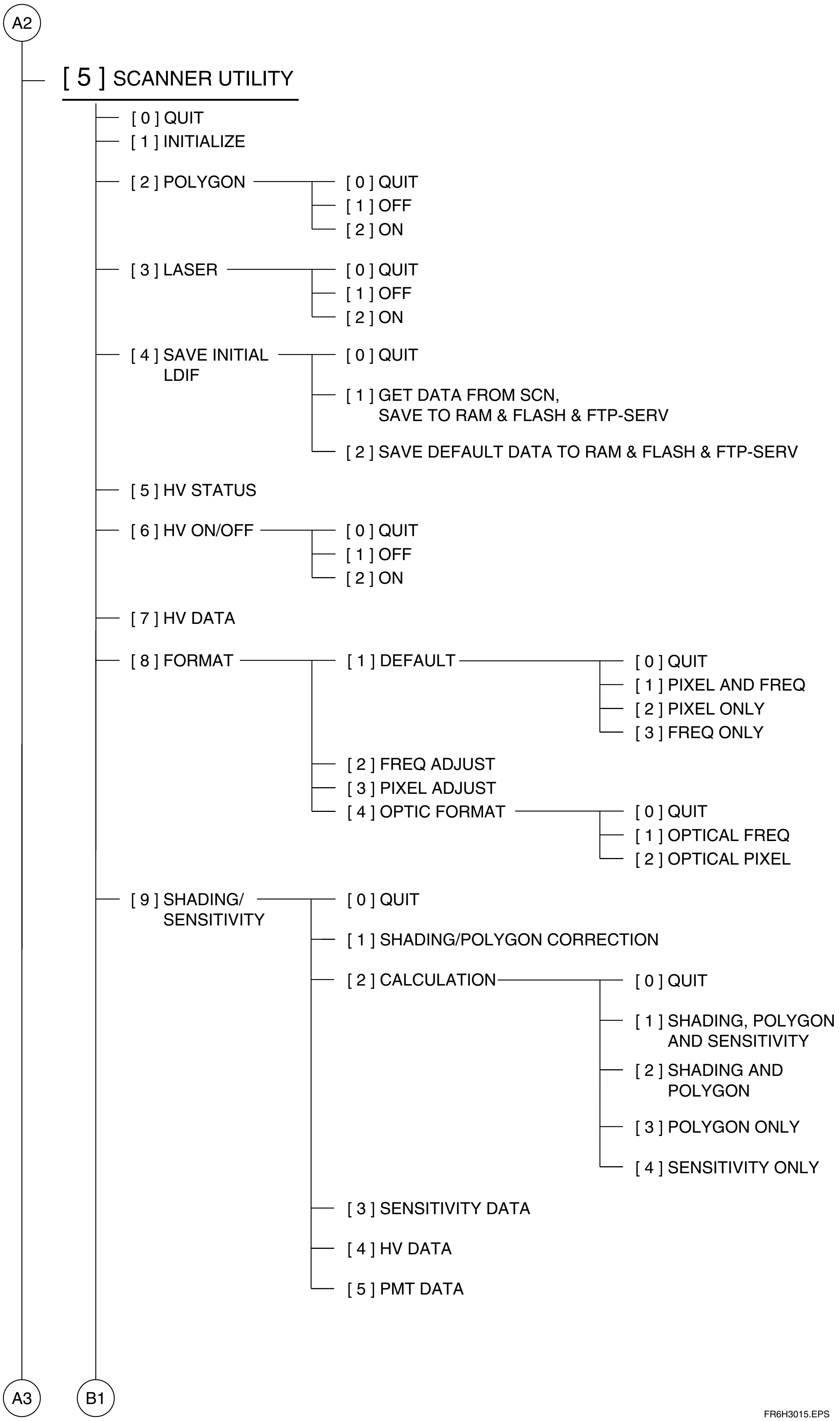

- [ 5 ] SCANNER UTILITY
  - [ 0 ] QUIT
  - [ 1 ] INITIALIZE
  - [ 2 ] POLYGON
    - [ 0 ] QUIT
    - [ 1 ] OFF
    - [ 2 ] ON
  - [ 3 ] LASER
    - [ 0 ] QUIT
    - [ 1 ] OFF
    - [ 2 ] ON
  - [ 4 ] SAVE INITIAL LDIF
    - [ 0 ] QUIT
    - [ 1 ] GET DATA FROM SCN, SAVE TO RAM & FLASH & FTP-SERV
    - [ 2 ] SAVE DEFAULT DATA TO RAM & FLASH & FTP-SERV
  - [ 5 ] HV STATUS
  - [ 6 ] HV ON/OFF
    - [ 0 ] QUIT
    - [ 1 ] OFF
    - [ 2 ] ON
  - [ 7 ] HV DATA
  - [ 8 ] FORMAT
    - [ 1 ] DEFAULT
      - [ 0 ] QUIT
      - [ 1 ] PIXEL AND FREQ
      - [ 2 ] PIXEL ONLY
      - [ 3 ] FREQ ONLY
    - [ 2 ] FREQ ADJUST
    - [ 3 ] PIXEL ADJUST
    - [ 4 ] OPTIC FORMAT
      - [ 0 ] QUIT
      - [ 1 ] OPTICAL FREQ
      - [ 2 ] OPTICAL PIXEL
  - [ 9 ] SHADING/ SENSITIVITY
    - [ 0 ] QUIT
    - [ 1 ] SHADING/POLYGON CORRECTION
    - [ 2 ] CALCULATION
      - [ 0 ] QUIT
      - [ 1 ] SHADING, POLYGON AND SENSITIVITY
      - [ 2 ] SHADING AND POLYGON
      - [ 3 ] POLYGON ONLY
      - [ 4 ] SENSITIVITY ONLY
    - [ 3 ] SENSITIVITY DATA
    - [ 4 ] HV DATA
    - [ 5 ] PMT DATA

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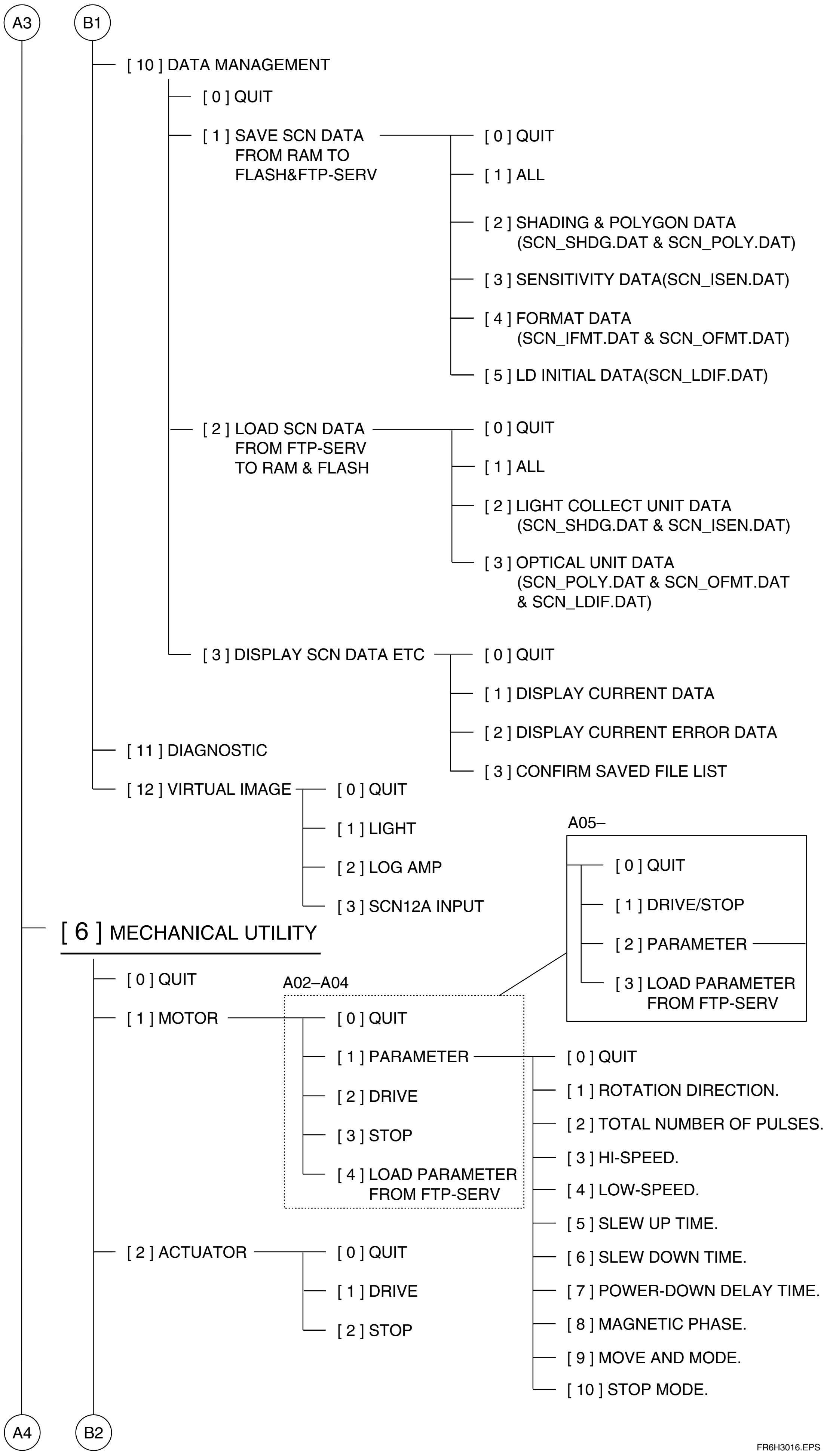
A3
B1
[ 10 ] DATA MANAGEMENT
[ 0 ] QUIT
[ 1 ] SAVE SCN DATA FROM RAM TO FLASH&FTP-SERV
[ 0 ] QUIT
[ 1 ] ALL
[ 2 ] SHADING & POLYGON DATA (SCN_SHDG.DAT & SCN_POLY.DAT)
[ 3 ] SENSITIVITY DATA(SCN_ISEN.DAT)
[ 4 ] FORMAT DATA (SCN_IFMT.DAT & SCN_OFMT.DAT)
[ 5 ] LD INITIAL DATA(SCN_LDIF.DAT)
[ 2 ] LOAD SCN DATA FROM FTP-SERV TO RAM & FLASH
[ 0 ] QUIT
[ 1 ] ALL
[ 2 ] LIGHT COLLECT UNIT DATA (SCN_SHDG.DAT & SCN_ISEN.DAT)
[ 3 ] OPTICAL UNIT DATA (SCN_POLY.DAT & SCN_OFMT.DAT & SCN_LDIF.DAT)
[ 3 ] DISPLAY SCN DATA ETC
[ 0 ] QUIT
[ 1 ] DISPLAY CURRENT DATA
[ 2 ] DISPLAY CURRENT ERROR DATA
[ 3 ] CONFIRM SAVED FILE LIST
[ 11 ] DIAGNOSTIC
[ 12 ] VIRTUAL IMAGE
[ 0 ] QUIT
[ 1 ] LIGHT
[ 2 ] LOG AMP
[ 3 ] SCN12A INPUT
A05–
[ 0 ] QUIT
[ 1 ] DRIVE/STOP
[ 2 ] PARAMETER
[ 3 ] LOAD PARAMETER FROM FTP-SERV
[ 6 ] MECHANICAL UTILITY
[ 0 ] QUIT
[ 1 ] MOTOR
A02–A04
[ 0 ] QUIT
[ 1 ] PARAMETER
[ 2 ] DRIVE
[ 3 ] STOP
[ 4 ] LOAD PARAMETER FROM FTP-SERV
[ 0 ] QUIT
[ 1 ] ROTATION DIRECTION.
[ 2 ] TOTAL NUMBER OF PULSES.
[ 3 ] HI-SPEED.
[ 4 ] LOW-SPEED.
[ 5 ] SLEW UP TIME.
[ 6 ] SLEW DOWN TIME.
[ 7 ] POWER-DOWN DELAY TIME.
[ 8 ] MAGNETIC PHASE.
[ 9 ] MOVE AND MODE.
[ 10 ] STOP MODE.
[ 2 ] ACTUATOR
[ 0 ] QUIT
[ 1 ] DRIVE
[ 2 ] STOP
A4
B2

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A4

B2

- [ 3 ] SENSOR
  - [ 0 ] QUIT
  - [ 1 ] MONITOR
  - [ 2 ] MONITOR ALL
  - [ 3 ] REAL-TIME MONITOR ALL
- [ 4 ] UNIT
  - [ 0 ] QUIT
  - [ 1 ] IP FEED/LOAD(MA1,MB1)
    - [ 0 ] QUIT
    - [ 1 ] HOME POSITION
    - [ 2 ] FEED
    - [ 3 ] LOAD
  - [ 2 ] SIDE-POSITIONING GRIP(MC2)
    - [ 0 ] QUIT
    - [ 1 ] HOME POSITION
  - [ 3 ] SIDE-POSITIONING(MC1)
    - [ 0 ] QUIT
    - [ 1 ] HOME POSITION
  - [ 4 ] SUB READING GRIP DRIVE(MZ2)
    - [ 0 ] QUIT
    - [ 1 ] HOME POSITION
  - [ 5 ] SUB READING DRIVE(MZ1)
    - [ 0 ] QUIT
    - [ 1 ] DRIVE
  - [ 6 ] TRANSFER MOTOR UNLIMITED DRIVE (MB1, MC3)
  - [ 7 ] SCANNER CLEANING (MZ3)
    - [ 0 ] QUIT
    - [ 1 ] HOME POSITION
    - [ 2 ] LOCK(ref. service manual)

**[ 7 ] SOFTWARE UTILITY**

- [ 0 ] QUIT
- [ 1 ] DISPLAY CONFIGURATION
  - [ 0 ] QUIT
  - [ 1 ] IRSET.CFG
  - [ 2 ] IRSTATUS.CFG
  - [ 3 ] NETMASK
  - [ 4 ] ROUTE
- [ 2 ] TEMPORARY SETTING
  - [ 0 ] QUIT
  - [ 1 ] READER UNIT NAME
  - [ 2 ] READER UNIT IP ADDR
  - [ 3 ] HOST(CL) IP ADDR
  - [ 4 ] INFO-HOST IP ADDR
  - [ 5 ] FTP-SERV IP ADDR
  - [ 6 ] NETMASK
  - [ 7 ] ROUTE(GATEWAY)

**[ 8 ] BACKUP MEMORY**

- [ 0 ] QUIT
- [ 1 ] INITIALIZE

**[ 9 ] HV ON / HV OFF**

FR6H3017.EPS

# 2. Functions of the PC-MUTL

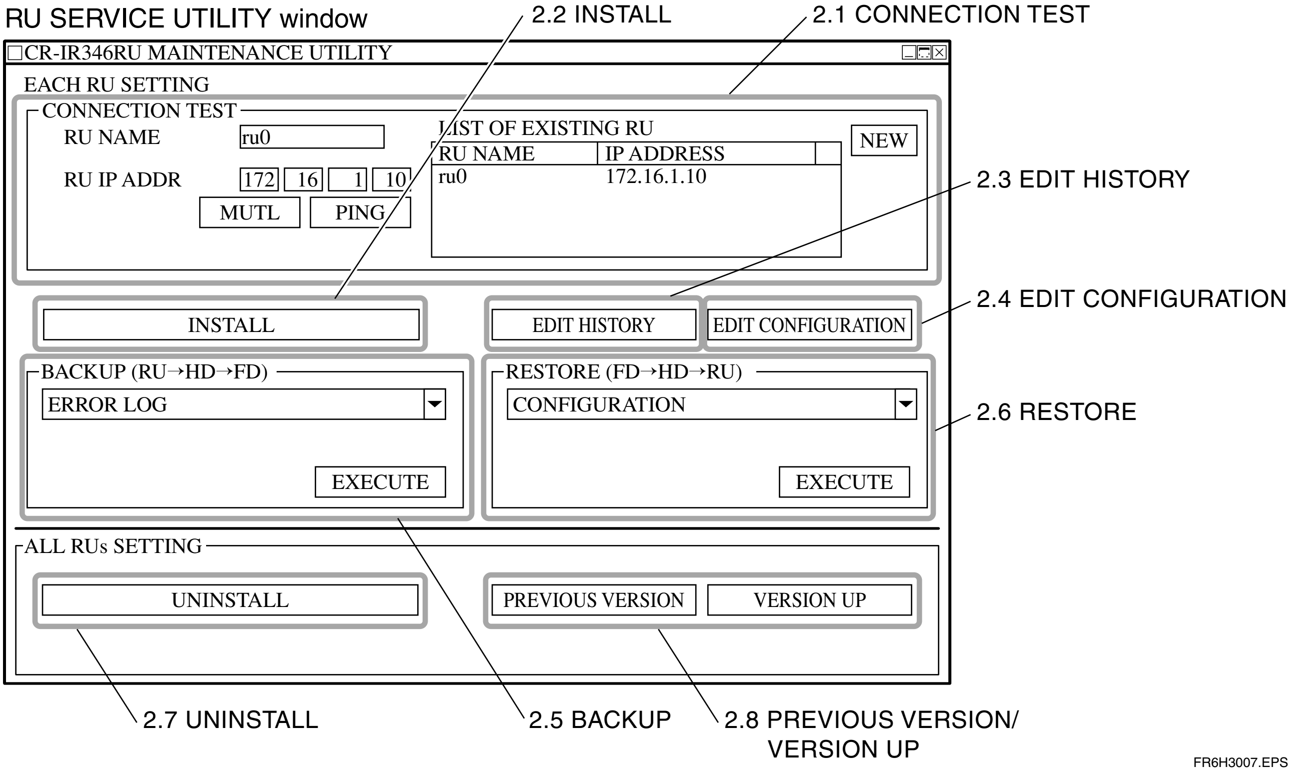
### ◇*REFERENCE*◇

*Each version of the PC-MUTL corresponds to each version of the RU software, as follows.*

- *RU software version A01 to A04: PC-MUTL version 1.0*
- *RU software version A05 to A06: PC-MUTL version 1.1*
- *RU software version A07 or later: PC-MUTL version 1.2*

## ■ Window of RU Software Version A01 to A04 (PC-MUTL Version 1.0)

RU SERVICE UTILITY window



CR-IR346RU MAINTENANCE UTILITY

RU NAME: ru0

RU IP ADDR: 172 . 16 . 1 . 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

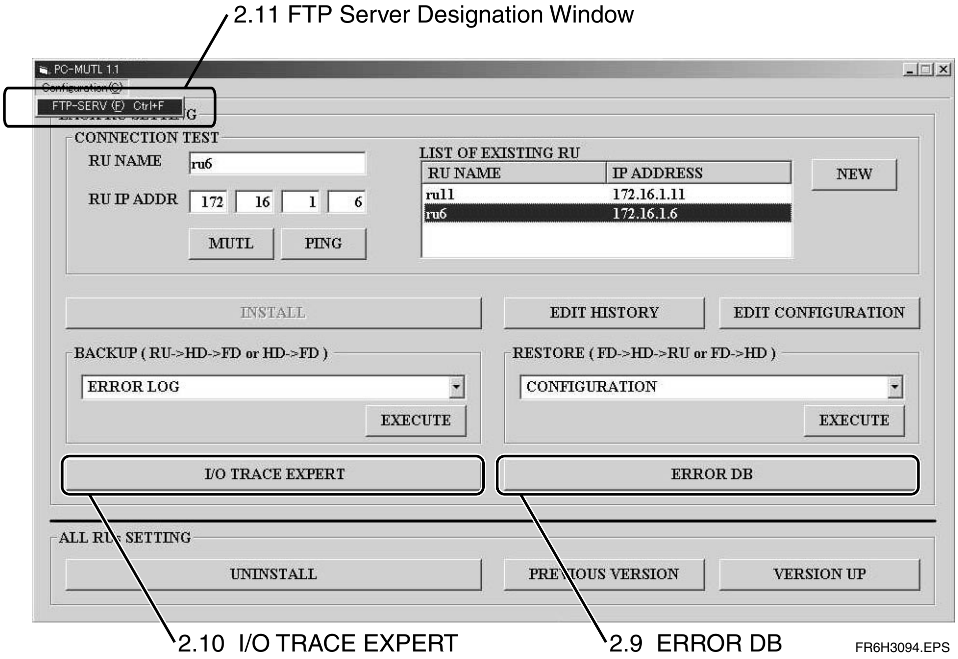
BACKUP (RU→HD→FD): ERROR LOG

RESTORE (FD→HD→RU): CONFIGURATION

EACH RU SETTING
CONNECTION TEST
NEW
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
2.2 INSTALL
2.1 CONNECTION TEST
2.3 EDIT HISTORY
2.4 EDIT CONFIGURATION
2.6 RESTORE
2.7 UNINSTALL
2.5 BACKUP
2.8 PREVIOUS VERSION/ VERSION UP

FR6H3007.EPS

## ■ Window of RU Software Version A05 to A06 (PC-MUTL Version 1.1)


2.11 FTP Server Designation Window
PC-MUTL 1.1
Configuration(C)
FTP-SERV (F) Ctrl+F
CONNECTION TEST
RU NAME
RU IP ADDR
MUTL
PING
LIST OF EXISTING RU
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
2.10 I/O TRACE EXPERT
2.9 ERROR DB

RU NAME: ru6

RU IP ADDR: 172 . 16 . 1 . 6

| RU NAME | IP ADDRESS |
|---|---|
| ru11 | 172.16.1.11 |
| ru6 | 172.16.1.6 |

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

FR6H3094.EPS

## ■ Window of RU Software Version A07 or Later (PC-MUTL Version 1.2)

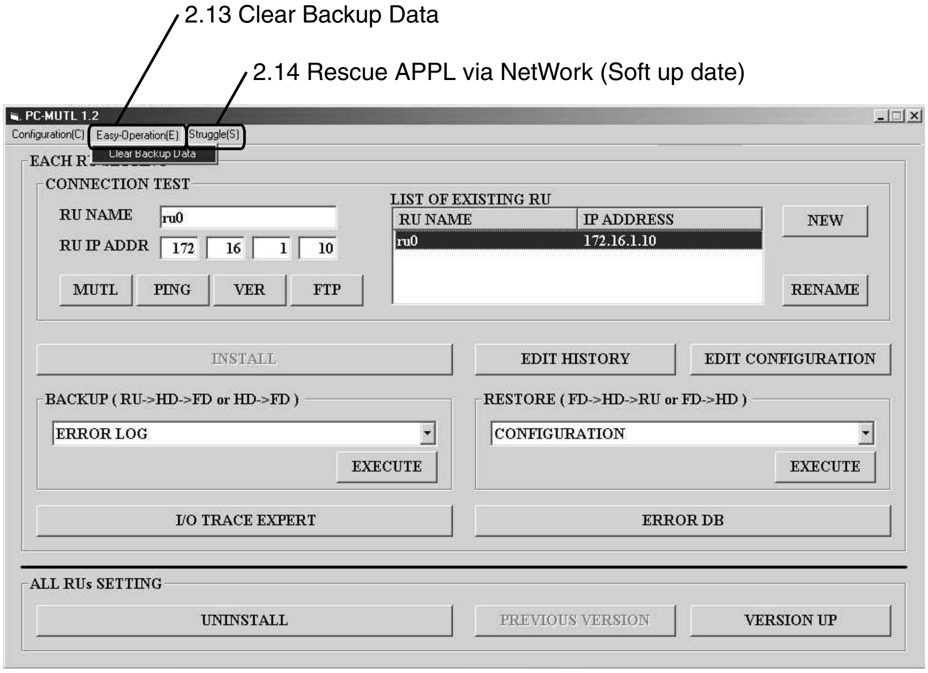
### ● Main changes in PC-MUTL 1.2

The PC-MUTL 1.2 that has been updated to support A07 version of the software has undergone the following three changes.

- Addition of the pull-down menu
- Addition of the RENAME button
- Addition of the VER and FTP buttons

Additionally, the config item (AUTO UPDATE) added in version A07 or later can be set up in the EDIT CONFIGURATION window.

### ● Window display and new functions


2.13 Clear Backup Data
2.14 Rescue APPL via NetWork (Soft up date)
PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
Clear Backup Data
EACH RU SETTING
CONNECTION TEST
RU NAME
RU IP ADDR
MUTL
PING
VER
FTP
LIST OF EXISTING RU
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru0

RU IP ADDR: 172 . 16 . 1 . 10

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

FR6H3098.EPS

# 2.1 CONNECTION TEST

In the CONNECTION TEST area of the PC-MUTL window are located the buttons to use the function for starting the M-Utility of the RU and use the function for confirming the network connection with the RU. With PC-MUTL version of 1.2 or later, the buttons are added to check the version of the RU software and verify the operating status of the FTP server running on the CL.

## ■ Functions of the Buttons

- [MUTL] button

  Used to start the M-Utility of the RU.
- [PING] button

  Used to confirm the network connection with the RU.
- [VER] button

  Used to check the software version of the RU.
- [FTP] button

  Used to access the FTP server used by the RU, either on the CL or from the RU, to confirm its operating status.

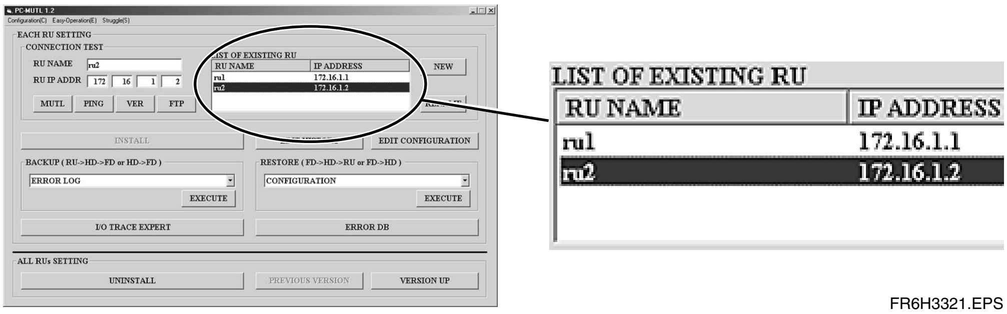
## 2.1.1 Procedures for Starting the M-Utility

When the “MUTL” button is clicked, the M-Utility command window opens to start the M-Utility.

☞ “1.2 Starting and Exiting the M-Utility”

## 2.1.2 PING: Procedures for Confirming Network Connection

(1) From “LIST OF EXISTING RU”, select a RU to confirm its connection.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 16 1 2

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3321.EPS

(2) Click on the [PING] button.
A DOS prompt window appears to display the test results.

[GOOD indication]

If messages shown below appear, the result is normal.

```
Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=10ms TTL=255
Reply from 172.16.1.10: bytes=32 time=10ms TTL=255
Reply from 172.16.1.10: bytes=32 time=10ms TTL=255
Reply from 172.16.1.10: bytes=32 time=10ms TTL=255

Ping statistics for 172.16.1.10:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 10ms, Average = 2ms
```

**◇ *REFERENCE* ◇**

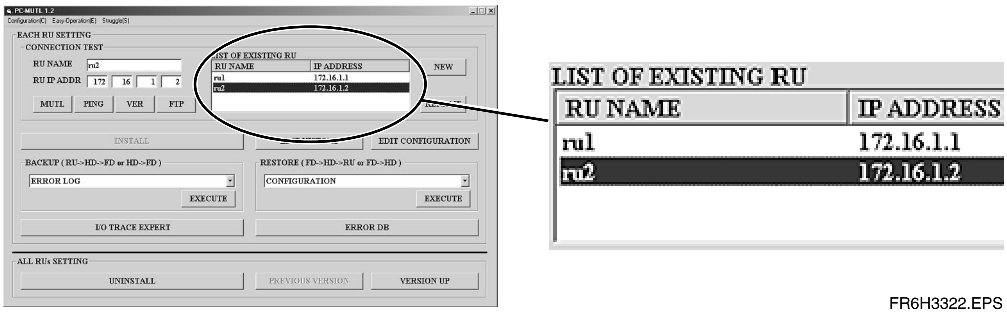
*Digits for XXX in TTL=”XXX” vary depending on the environment in which the command is executed.*

[NG indication]

Other than the above.

## 2.1.3 VER: Procedures for Checking the Software Version of the RU (Implemented with RU Software Version of A07 or Later, or PC-MUTL 1.2 or Later)

(1) From “LIST OF EXISTING RU”, select a RU to check the version of the software.


PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2
RU IP ADDR: 172 16 1 2
BACKUP: ERROR LOG
RESTORE: CONFIGURATION

LIST OF EXISTING RU

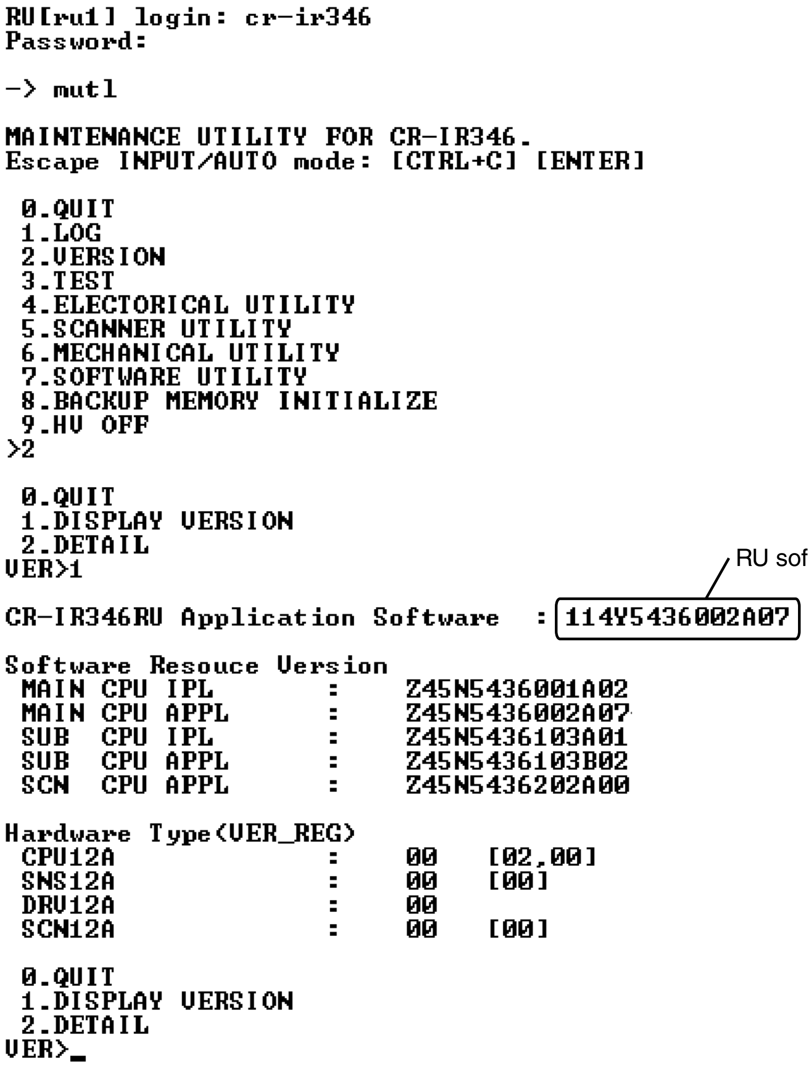
| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3322.EPS

(2) Click on the [VER] button.

A prompt appears to display the software version of the RU.

[Screen display]



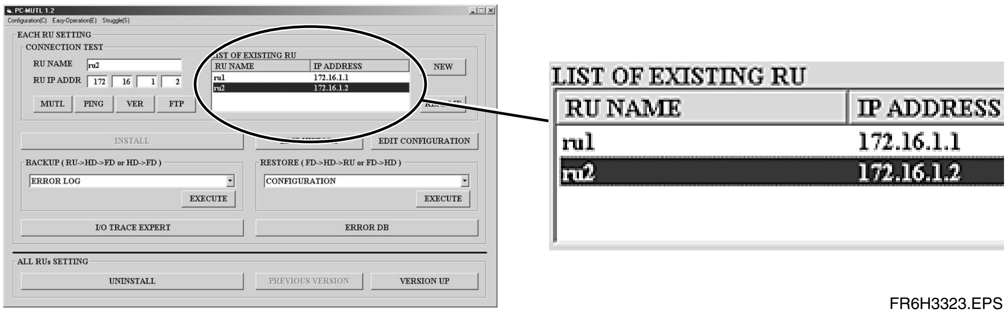
```
RU[ru1] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV OFF
>2

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>1

CR-IR346RU Application Software   : 114Y5436002A07

Software Resouce Version
 MAIN CPU IPL        :    Z45N5436001A02
 MAIN CPU APPL       :    Z45N5436002A07
 SUB  CPU IPL        :    Z45N5436103A01
 SUB  CPU APPL       :    Z45N5436103B02
 SCN  CPU APPL       :    Z45N5436202A00

Hardware Type(VER_REG)
 CPU12A              :    00   [02,00]
 SNS12A              :    00   [00]
 DRV12A              :    00
 SCN12A              :    00   [00]

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>_
```

RU software version

FR6H3099.EPS

## 2.1.4 FTP: Confirming the FTP Server of the RU (Implemented with RU Software Version of A07 or Later, or PC-MUTL 1.2 or Later)

(1) From “LIST OF EXISTING RU”, select a RU to confirm the FTP server.


PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 . 16 . 1 . 2

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

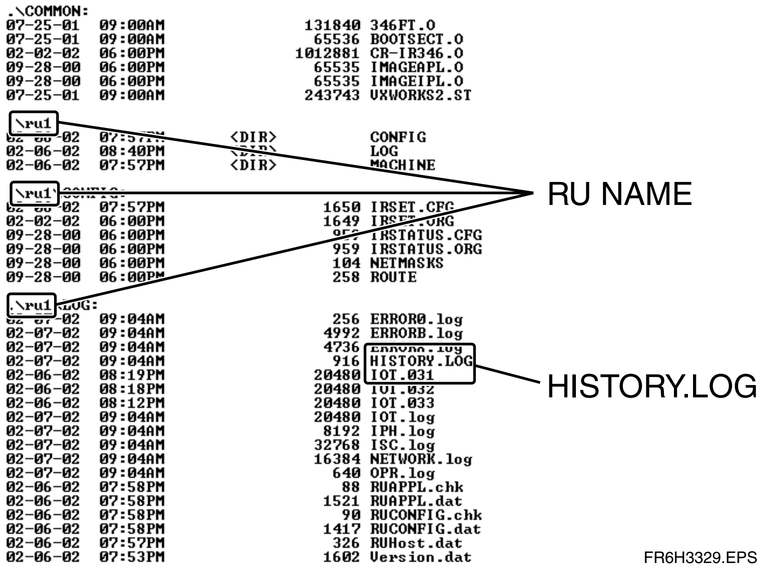
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3323.EPS

(2) Click on the [FTP] button.

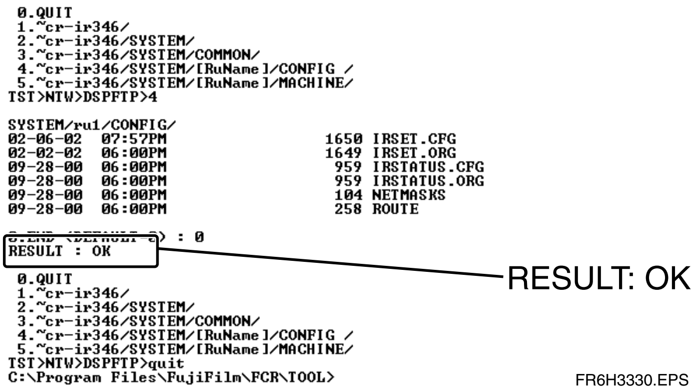
- Screen display where the FTP server is accessed on the CL


RU NAME
HISTORY.LOG

```
.\COMMON:
07-25-01  09:00AM              131840 346FT.O
07-25-01  09:00AM               65536 BOOTSECT.O
02-02-02  06:00PM             1012881 CR-IR346.O
09-28-00  06:00PM               65535 IMAGEAPL.O
09-28-00  06:00PM               65535 IMAGEIPL.O
07-25-01  09:00AM              243743 VXWORKS2.ST

.\ru1
02-06-02  07:57PM       <DIR>         CONFIG
02-06-02  08:40PM       <DIR>         LOG
02-06-02  07:57PM       <DIR>         MACHINE

.\ru1\CONFIG:
02-06-02  07:57PM                1650 IRSET.CFG
02-02-02  06:00PM                1649 IRSET.ORG
09-28-00  06:00PM                 959 IRSTATUS.CFG
09-28-00  06:00PM                 959 IRSTATUS.ORG
09-28-00  06:00PM                 104 NETMASKS
09-28-00  06:00PM                 258 ROUTE

.\ru1\LOG:
02-07-02  09:04AM                 256 ERROR0.log
02-07-02  09:04AM                4992 ERRORB.log
02-07-02  09:04AM                4736 ERRORA.log
02-07-02  09:04AM                 916 HISTORY.LOG
02-06-02  08:19PM               20480 IOT.031
02-06-02  08:18PM               20480 IOT.032
02-06-02  08:12PM               20480 IOT.033
02-07-02  09:04AM               20480 IOT.log
02-07-02  09:04AM                8192 IPH.log
02-07-02  09:04AM               32768 ISC.log
02-07-02  09:04AM               16384 NETWORK.log
02-07-02  09:04AM                 640 OPR.log
02-06-02  07:58PM                  88 RUAPPL.chk
02-06-02  07:58PM                1521 RUAPPL.dat
02-06-02  07:58PM                  90 RUCONFIG.chk
02-06-02  07:58PM                1417 RUCONFIG.dat
02-06-02  07:57PM                 326 RUHost.dat
02-06-02  07:53PM                1602 Version.dat
```

FR6H3329.EPS

- Screen display where the FTP server is accessed from the RU



```
 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>4

SYSTEM/ru1/CONFIG/
02-06-02  07:57PM                1650 IRSET.CFG
02-02-02  06:00PM                1649 IRSET.ORG
09-28-00  06:00PM                 959 IRSTATUS.CFG
09-28-00  06:00PM                 959 IRSTATUS.ORG
09-28-00  06:00PM                 104 NETMASKS
09-28-00  06:00PM                 258 ROUTE

0.END (DEFAULT=0) : 0
RESULT : OK
 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>quit
C:\Program Files\FujiFilm\FCR\TOOL>
```

FR6H3330.EPS

## 2.1.5 RENAME: Changing RU NAME (Implemented with RU Software Version of A07 or Later, or PC-MUTL 1.2 or Later)

### ■ Procedure for RENAME

**◆ *NOTE* ◆**

*For the RU whose RU NAME has been changed by use of RENAME, PREVIOUS VERSION cannot be executed.*

(1) Exit the CL software.

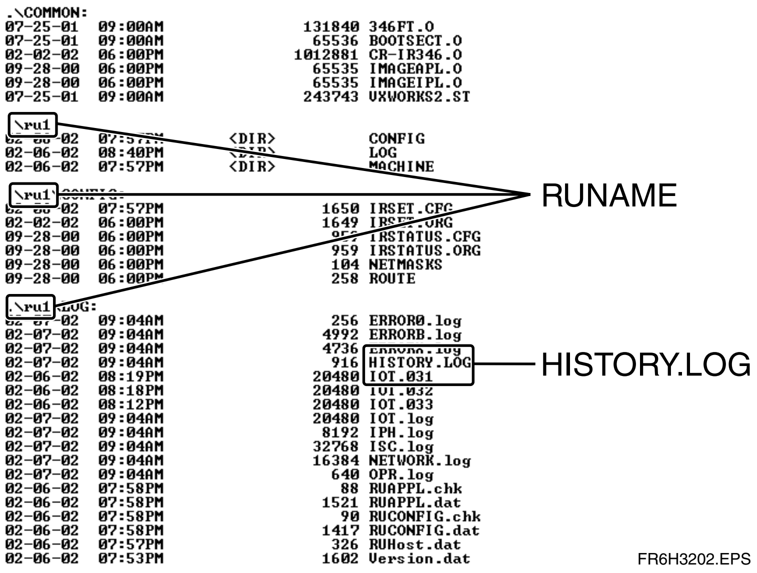
(2) Start the PC-MUTL.

(3) From "LIST OF EXISTING RU", select a RU to execute RENAME.

(4) Click on the [FTP] button.

On the DOS prompt window displayed, check "RU NAME", "HISTORY.LOG", and "RESULT: OK".

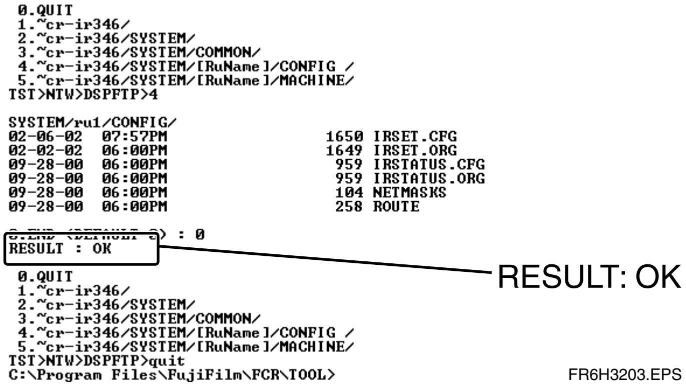
- Screen display where the FTP server is accessed on the CL



```
.\COMMON:
07-25-01  09:00AM              131840 346FT.O
07-25-01  09:00AM               65536 BOOTSECT.O
02-02-02  06:00PM             1012881 CR-IR346.O
09-28-00  06:00PM               65535 IMAGEAPL.O
09-28-00  06:00PM               65535 IMAGEIPL.O
07-25-01  09:00AM              243743 VXWORKS2.ST

.\ru1:
02-06-02  07:57PM    <DIR>            CONFIG
02-06-02  08:40PM    <DIR>            LOG
02-06-02  07:57PM    <DIR>            MACHINE

.\ru1\CONFIG:
02-06-02  07:57PM                1650 IRSET.CFG
02-02-02  06:00PM                1649 IRSET.ORG
09-28-00  06:00PM                 959 IRSTATUS.CFG
09-28-00  06:00PM                 959 IRSTATUS.ORG
09-28-00  06:00PM                 104 NETMASKS
09-28-00  06:00PM                 258 ROUTE

.\ru1\LOG:
02-07-02  09:04AM                 256 ERROR0.log
02-07-02  09:04AM                4992 ERRORB.log
02-07-02  09:04AM                4736 ERROR[illegible].log
02-07-02  09:04AM                 916 HISTORY.LOG
02-06-02  08:19PM               20480 IOT.031
02-06-02  08:18PM               20480 IOT.032
02-06-02  08:12PM               20480 IOT.033
02-07-02  09:04AM               20480 IOT.log
02-07-02  09:04AM                8192 IPH.log
02-07-02  09:04AM               32768 ISC.log
02-07-02  09:04AM               16384 NETWORK.log
02-07-02  09:04AM                 640 OPR.log
02-06-02  07:58PM                  88 RUAPPL.chk
02-06-02  07:58PM                1521 RUAPPL.dat
02-06-02  07:58PM                  90 RUCONFIG.chk
02-06-02  07:58PM                1417 RUCONFIG.dat
02-06-02  07:57PM                 326 RUHost.dat
02-06-02  07:53PM                1602 Version.dat
```

FR6H3202.EPS

- Screen display where the FTP server is accessed from the RU

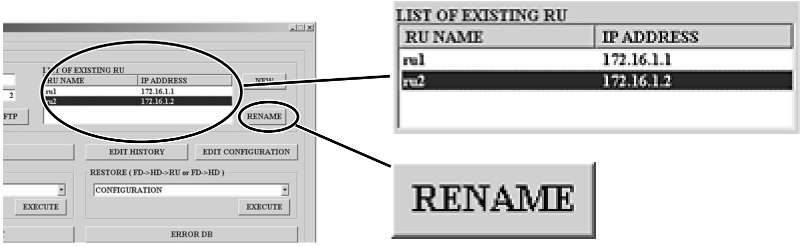


```
 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>4

SYSTEM/ru1/CONFIG/
02-06-02  07:57PM                1650 IRSET.CFG
02-02-02  06:00PM                1649 IRSET.ORG
09-28-00  06:00PM                 959 IRSTATUS.CFG
09-28-00  06:00PM                 959 IRSTATUS.ORG
09-28-00  06:00PM                 104 NETMASKS
09-28-00  06:00PM                 258 ROUTE

0.END <DEFAULT=0> : 0
RESULT : OK
 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>quit
C:\Program Files\FujiFilm\FCR\TOOL>
```

FR6H3203.EPS

(5) Click on the [RENAME] button.

A dialog box appears to prompt you to enter a new RENAME.



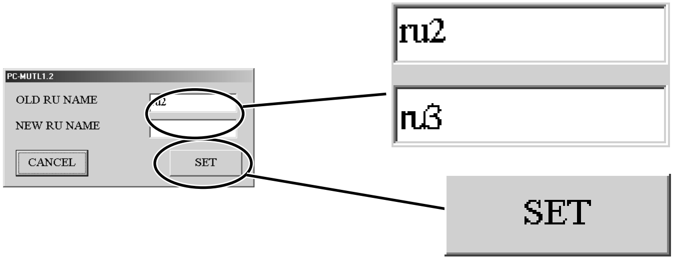
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

NEW
FTP
RENAME
EDIT HISTORY
EDIT CONFIGURATION
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
EXECUTE
ERROR DB
RENAME

FR6H3138.EPS

(6) Type in a new RU NAME and click on the [SET] button.



PC-MUTL1.2

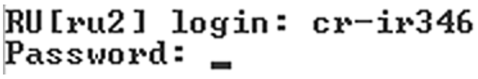
OLD RU NAME: ru2

NEW RU NAME: ru3

CANCEL
SET
SET

FR6H3140.EPS

A DOS prompt appears, and after a while, all the panel indicators on the RU blink four times, with an audible alarm generated.



```
RU[ru2] login: cr-ir346
Password: _
```

FR6H3142.EPS

This process will end after about one minute has passed, and the PC-MUTL window appears.

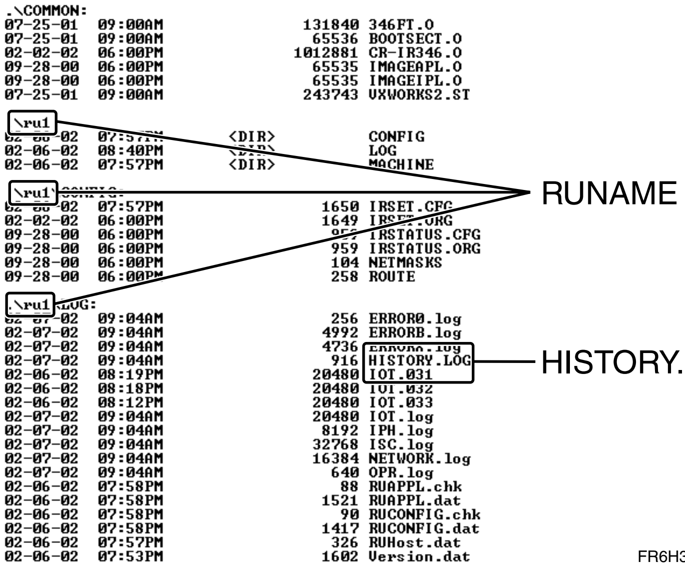
**CAUTION**

*Never power OFF the RU until the RENAME process ends completely (i.e., until the PC-MUTL window appears).*

(7) Click on the [FTP] button.

On the DOS prompt window displayed, check “RU NAME”, “HISTORY.LOG”, and “RESULT: OK”.

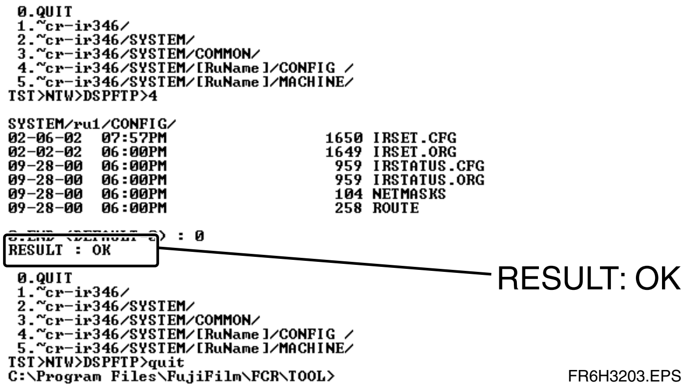
- Screen display where the FTP server is accessed on the CL



```
.\COMMON:
07-25-01  09:00AM                131840 346FT.O
07-25-01  09:00AM                 65536 BOOTSECT.O
02-02-02  06:00PM               1012881 CR-IR346.O
09-28-00  06:00PM                 65535 IMAGEAPL.O
09-28-00  06:00PM                 65535 IMAGEIPL.O
07-25-01  09:00AM                243743 VXWORKS2.ST

\ru1
02-06-02  07:57PM        <DIR>          CONFIG
02-06-02  08:40PM        <DIR>          LOG
02-06-02  07:57PM        <DIR>          MACHINE

\ru1\CONFIG:
02-06-02  07:57PM                  1650 IRSET.CFG
02-02-02  06:00PM                  1649 IRSET.ORG
09-28-00  06:00PM                   959 IRSTATUS.CFG
09-28-00  06:00PM                   959 IRSTATUS.ORG
09-28-00  06:00PM                   104 NETMASKS
09-28-00  06:00PM                   258 ROUTE

.\ru1\LOG:
02-07-02  09:04AM                   256 ERROR0.log
02-07-02  09:04AM                  4992 ERRORB.log
02-07-02  09:04AM                  4736 ERRORR.log
02-07-02  09:04AM                   916 HISTORY.LOG
02-06-02  08:19PM                 20480 IOT.031
02-06-02  08:18PM                 20480 IOT.032
02-06-02  08:12PM                 20480 IOT.033
02-07-02  09:04AM                 20480 IOT.log
02-07-02  09:04AM                  8192 IPH.log
02-07-02  09:04AM                 32768 ISC.log
02-07-02  09:04AM                 16384 NETWORK.log
02-07-02  09:04AM                   640 OPR.log
02-06-02  07:58PM                    88 RUAPPL.chk
02-06-02  07:58PM                  1521 RUAPPL.dat
02-06-02  07:58PM                    90 RUCONFIG.chk
02-06-02  07:58PM                  1417 RUCONFIG.dat
02-06-02  07:57PM                   326 RUHost.dat
02-06-02  07:53PM                  1602 Version.dat
```

FR6H3202.EPS

- Screen display where the FTP server is accessed from the RU



```
 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>4

SYSTEM/ru1/CONFIG/
02-06-02  07:57PM                  1650 IRSET.CFG
02-02-02  06:00PM                  1649 IRSET.ORG
09-28-00  06:00PM                   959 IRSTATUS.CFG
09-28-00  06:00PM                   959 IRSTATUS.ORG
09-28-00  06:00PM                   104 NETMASKS
09-28-00  06:00PM                   258 ROUTE

0.END <DEFAULT 0> : 0
RESULT : OK
 0.QUIT
 1.~cr-ir346/
 2.~cr-ir346/SYSTEM/
 3.~cr-ir346/SYSTEM/COMMON/
 4.~cr-ir346/SYSTEM/[RuName]/CONFIG /
 5.~cr-ir346/SYSTEM/[RuName]/MACHINE/
TST>NTW>DSPFTP>quit
C:\Program Files\FujiFilm\FCR\TOOL>
```

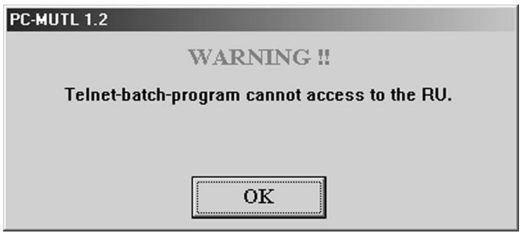
FR6H3203.EPS

## 2.1.6 Errors That May Occur during RENAME and Their Probable Causes

- RU is not connected

  If the RU has not been powered ON or if no network connection has been established with the RU, the following error message appears.

  In that case, check the network connection, and then power ON the RU.



WARNING !!

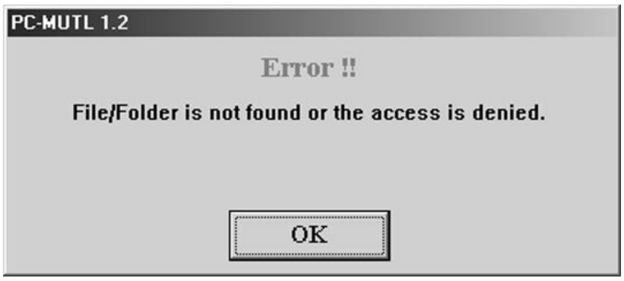
Telnet-batch-program cannot access to the RU.

FR6H3148.EPS

- RU name designated is incorrect or FTP server is not set up

  If the RU name designated is incorrect or if the FTP server has not been set up, the following message appears.

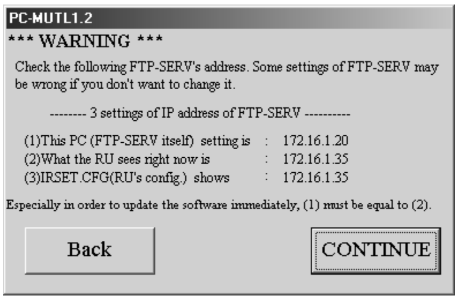
  In that case, click on the [Back] or [CONTINUE] button to go back to the previous screen, and perform the procedures all over again after checking the IP address and FTP server.



Error !!

File/Folder is not found or the access is denied.

FR6H3342.EPS



```
*** WARNING ***
 Check the following FTP-SERV's address. Some settings of FTP-SERV may
 be wrong if you don't want to change it.

        -------- 3 settings of IP address of FTP-SERV ----------

  (1)This PC (FTP-SERV itself)  setting is   :   172.16.1.20
  (2)What the RU sees right now is           :   172.16.1.35
  (3)IRSET.CFG(RU's config.)  shows          :   172.16.1.35
Especially in order to update the software immediately, (1) must be equal to (2).
```

FR6H3343.EPS

## 2.2 INSTALL

This function installs the RU software contained in the CD-ROM.

◇ ***REFERENCE*** ◇

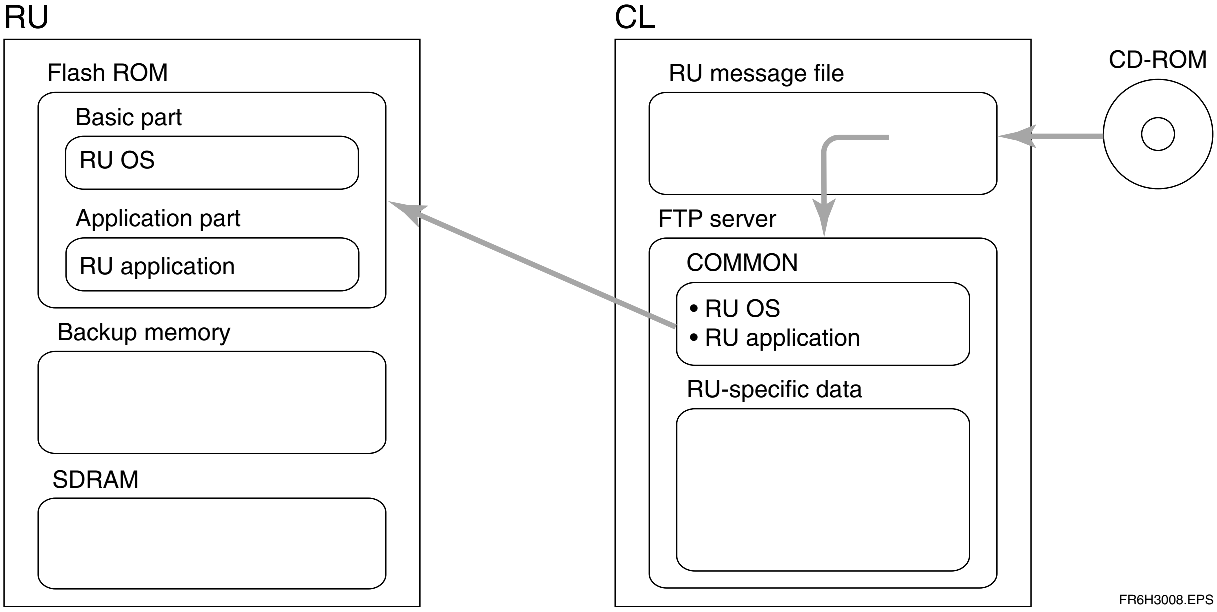
*The timing of writing into the flash ROM of the RU differs depending on the software version.*

- *RU software version A06 (PC-MUTL 1.1) or earlier*
  → *Written only into the FTP server of the CL.*
- *RF software version A07 (PC-MUTL 1.2) or later*
  → *Written both into the FTP server of the CL and into the flash ROM of the RU.*

*It should be noted that with RU software version A06, the RU software is written, upon power ON of the RU, into its flash ROM by auto update function.*

◆ ***NOTE*** ◆

*Be sure to execute "PING" to the RU to be installed to ensure that a network connection has been established.*
*Although RU software may be installed to the CL without a network connection established, the backup memory of the RU will not be overwritten, so that a connection with the RU cannot be established.*


RU
Flash ROM
Basic part
RU OS
Application part
RU application
Backup memory
SDRAM
CL
RU message file
FTP server
COMMON
• RU OS
• RU application
RU-specific data
CD-ROM

FR6H3008.EPS

## 2.2.1 Procedures for Installing the RU Software: First Unit (RU Software Version A07 or Later)

This section describes the installation procedures for RU software version A07 or later.

For the procedures for RU software version A06 or earlier, see the Service Manual of the CL.

☞ “CL Service Manual, Installation (IN-B), Appendix 2, Section 8”

### *CAUTIONS*

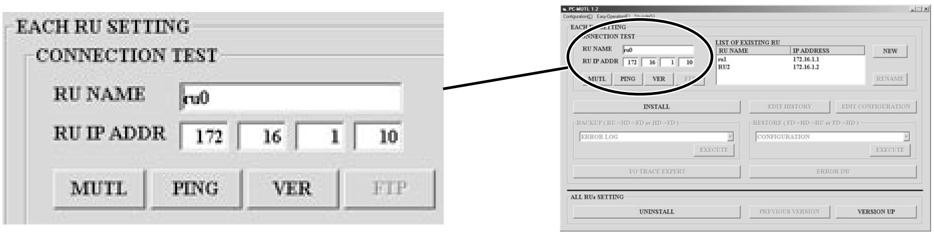
- *In an N-to-N connection setup, perform the procedures described in “Procedures for Installing the RU Software: Second Unit (RU Software Version A07 or Later)” after completing the procedures described in this section.*
- *Before starting installation, be sure to execute “PING” to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be installed.*
- *In an N-to-N connection setup, make sure that the software versions of the RUs connected are the same. If different versions of the RU software are installed, the operation of the CL and RU cannot be guaranteed.*

### ◇ *REFERENCE* ◇

*Because the value displayed in each setup item differs depending on the PC-MUTL version, set it up again as needed.*

*PC-MUTL 1.1 (A06) or earlier : The default value is displayed.*
*PC-MUTL 1.2 (A07) or later : The value that is currently set is displayed.*

(1) In “RU NAME” of the PC-MUTL, type in the name of the RU to be installed.



RU NAME: ru0
RU IP ADDR: 172 16 1 10

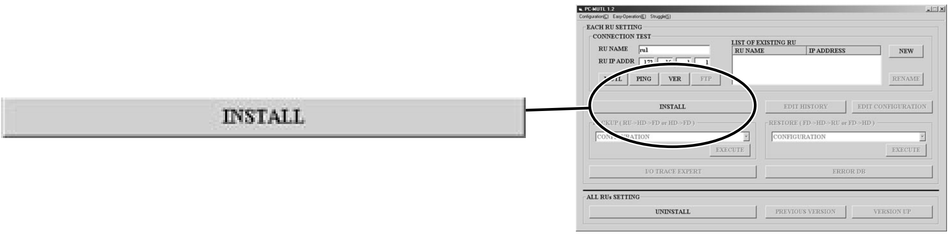
FR6H3160.EPS

(2) In “RU IP ADDR” of the PC-MUTL, type in the IP address of the RU that has been taken note of before starting the procedures described in “2.7 UNINSTALL, ■ Uninstalling the RU software”.

(3) Click on the [PING] button.

Referring to the DOS prompt window displayed, verify that the result is 100% successful.

(4) Click on the [INSTALL] button.

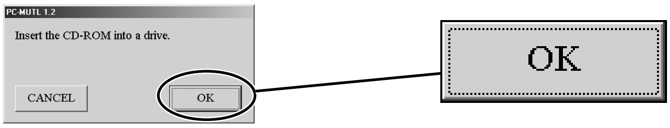

INSTALL
PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
RU NAME
IP ADDRESS
NEW
PING
VER
FTP
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME ru1

FR6H3162.EPS

A dialog box appears to prompt you to insert the CD-ROM.

(5) Put the Ver.up CD-R into the CL and click on the [OK] button.

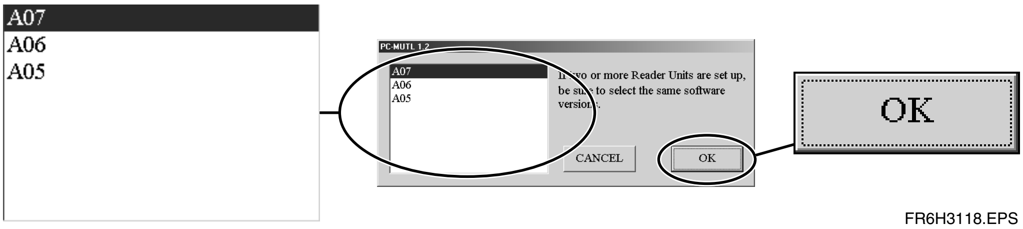

PC-MUTL 1.2
CANCEL
OK
OK

Insert the CD-ROM into a drive.

FR6H3117.EPS

A dialog box appears to check the version of the software to be installed.

(6) Select the desired version of the software, and click on the [OK] button.

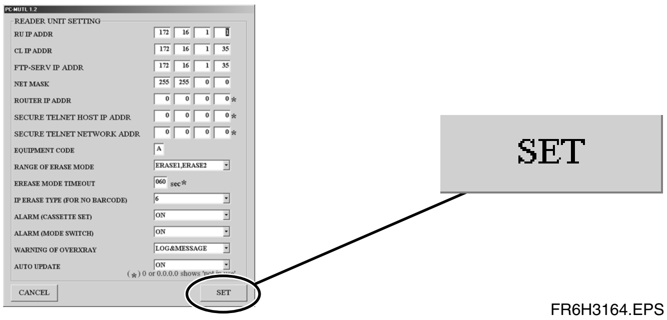

A07
A06
A05
PC-MUTL 1.2
A07
A06
A05
CANCEL
OK
OK

If two or more Reader Units are set up, be sure to select the same software version.

FR6H3118.EPS

The EDIT CONFIGURATION window appears.

(7) Set up the configuration as appropriate, and click on the [SET] button.


PC-MUTL 1.2
READER UNIT SETTING
CANCEL
SET
SET

RU IP ADDR 172 16 1 1
CL IP ADDR 172 16 1 35
FTP-SERV IP ADDR 172 16 1 35
NET MASK 255 255 0 0
ROUTER IP ADDR 0 0 0 0 *
SECURE TELNET HOST IP ADDR 0 0 0 0 *
SECURE TELNET NETWORK ADDR 0 0 0 0 *
EQUIPMENT CODE A
RANGE OF ERASE MODE ERASE1,ERASE2
EREASE MODE TIMEOUT 060 sec*
IP ERASE TYPE (FOR NO BARCODE) 6
ALARM (CASSETTE SET) ON
ALARM (MODE SWITCH) ON
WARNING OF OVERXRAY LOG&MESSAGE
AUTO UPDATE ON
( * ) 0 or 0.0.0.0 shows 'not in use'

FR6H3164.EPS

RU software installation starts.

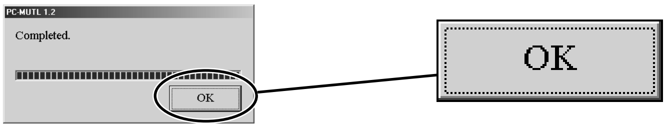
(8) Make sure that all the panel indicators on the RU are lit with an audible alarm generated.

**CAUTION**

*Do not power OFF the RU while the software is being installed.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

After about two minutes have passed, a dialog box appears notifying that the installation has been completed.

(9) Click on the [OK] button.


PC-MUTL 1.2

Completed.

FR6H3119.EPS

The PC-MUTL window appears back on screen, where the RU installed is displayed in “LIST OF EXISTING RU”.

## 2.2.2 Procedures for Installing the RU Software: Second Unit (RU Software Version A07 or Later)

For installation of the RU software for the second and subsequent units, the procedure for registering the RU name is different from that for the first unit.

Otherwise, the procedures are the same as for the first unit.

**CAUTIONS**

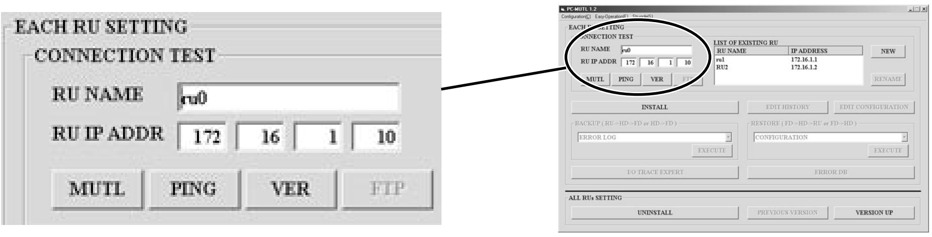
- *Installation of the RU software for the second and subsequent units should be performed following the installation for the first unit.*
- *Before starting installation, be sure to execute "PING" to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be installed.*

(1) Click on the [NEW] button.

"RU NAME" and "RU IP ADDR" are cleared.

(2) In "RU NAME" of the PC-MUTL, type in the name of the RU to be installed.

(3) In "RU IP ADDR" of the PC-MUTL, type in the IP address of the RU that has been taken note of before starting the procedures described in "2.7 UNINSTALL, ■ Uninstalling the RU software".



RU NAME: ru0

RU IP ADDR: 172 16 1 10

FR6H3331.EPS

(4) Click on the [PING] button.

Referring to the DOS prompt window displayed, verify that the result is 100% successful.

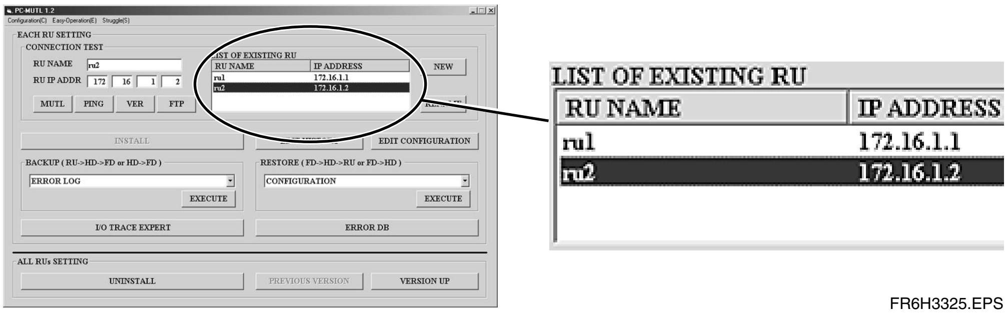
(5) Perform steps (4) through (9) described in "2.2.1 Procedures for Installing the RU Software: First Unit (RU Software Version A07 or Later)".

## 2.2.3 Checks after Installing the RU Software

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU”, select a RU to execute RENAME.


PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 16 1 2

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

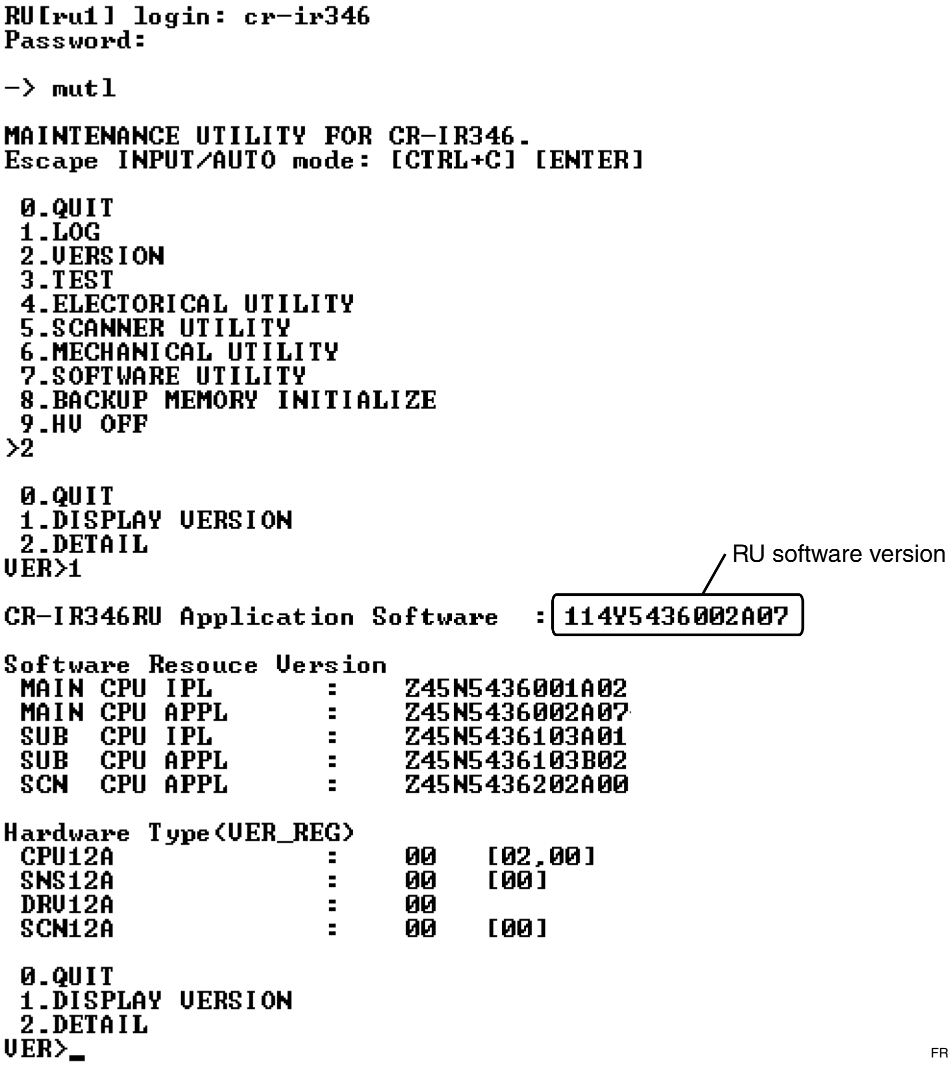
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3325.EPS

(4) Click on the [VER] button.

As a DOS prompt window appears, make sure that the version displayed is the version of the software installed.


RU software version

```
RU[ru1] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV OFF
>2

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>1

CR-IR346RU Application Software   : 114Y5436002A07

Software Resouce Version
 MAIN CPU IPL        :    Z45N5436001A02
 MAIN CPU APPL       :    Z45N5436002A07
 SUB  CPU IPL        :    Z45N5436103A01
 SUB  CPU APPL       :    Z45N5436103B02
 SCN  CPU APPL       :    Z45N5436202A00

Hardware Type(VER_REG)
 CPU12A              :    00   [02,00]
 SNS12A              :    00   [00]
 DRV12A              :    00
 SCN12A              :    00   [00]

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>_
```

FR6H3124.EPS

(5) In an N-to-N connection setup, perform steps (3) and (4) for all the RUs installed.

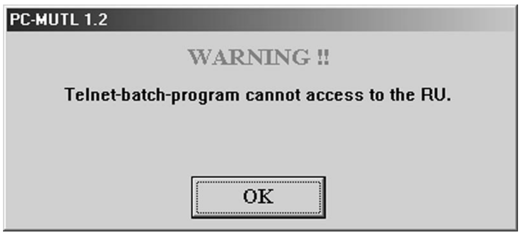
## 2.2.4 Errors That May Occur during Install

### ■ Errors That May Occur during Install and Their Probable Causes

- RU is not connected

  If the RU has not been powered ON or if no network connection has been established with the RU, the following error message appears.

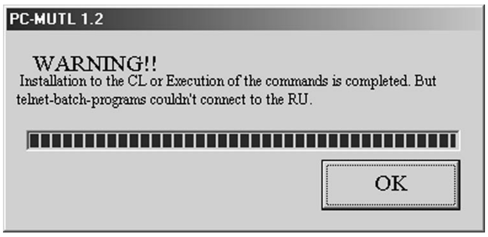
  In that case, check the network connection, and then power ON the RU.



WARNING !!

Telnet-batch-program cannot access to the RU.

FR6H3120.EP



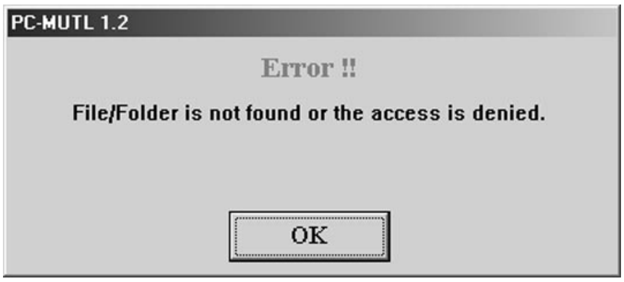
WARNING!!
Installation to the CL or Execution of the commands is completed. But telnet-batch-programs couldn't connect to the RU.

FR6H3121.EPS

- RU name designated is incorrect or FTP server is not set up

  If the RU name designated is incorrect or if the FTP server has not been set up, the following message appears.

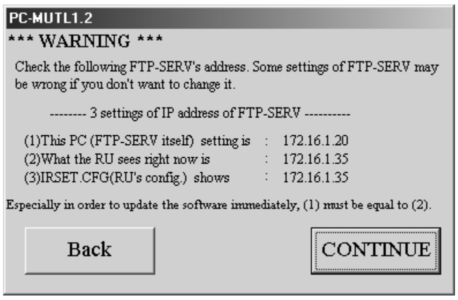
  In that case, click on the [Back] or [CONTINUE] button to go back to the previous screen, and perform the procedures all over again after checking the IP address and FTP server.



Error !!

File/Folder is not found or the access is denied.

FR6H3342.EPS



*** WARNING ***

Check the following FTP-SERV's address. Some settings of FTP-SERV may be wrong if you don't want to change it.

-------- 3 settings of IP address of FTP-SERV ----------

(1)This PC (FTP-SERV itself) setting is : 172.16.1.20
(2)What the RU sees right now is : 172.16.1.35
(3)IRSET.CFG(RU's config.) shows : 172.16.1.35

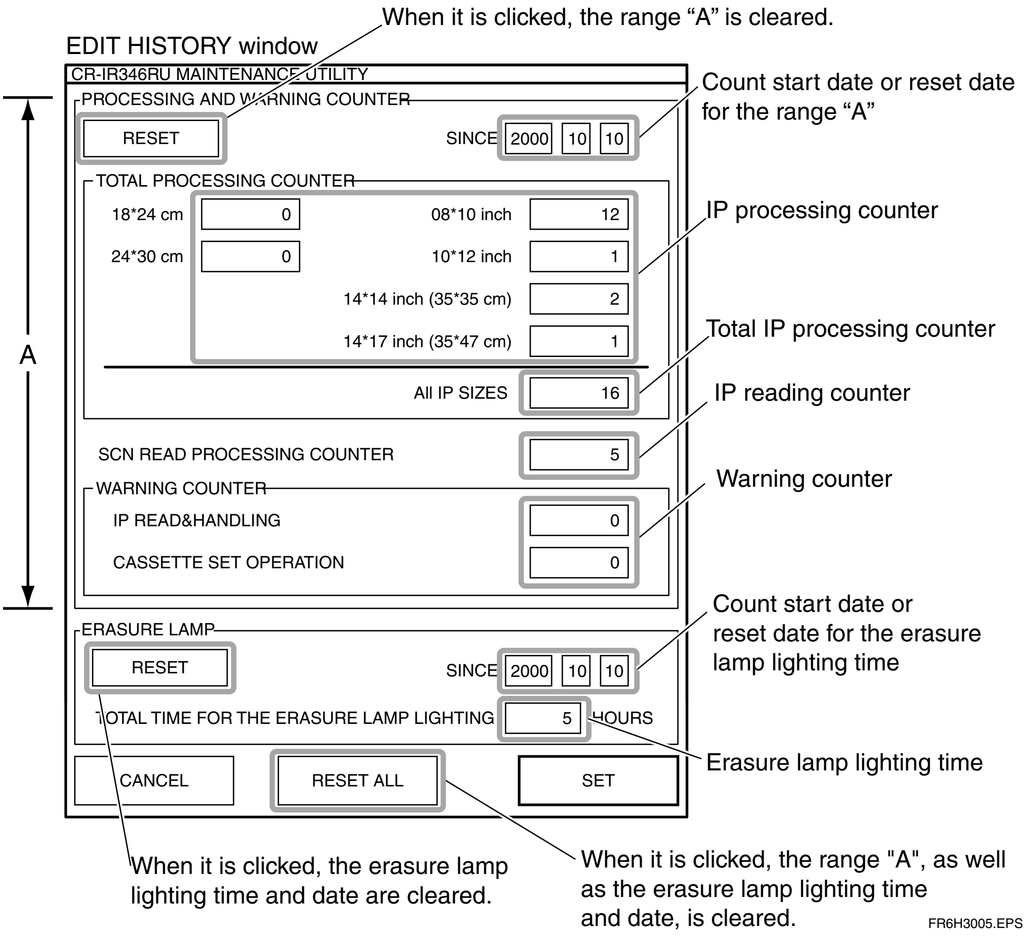
Especially in order to update the software immediately, (1) must be equal to (2).

FR6H3343.EPS

# 2.3 EDIT HISTORY

This function displays and edits the RU processing counter and erasure lamp lighting time.

## ■ EDIT HISTORY Window



EDIT HISTORY window

CR-IR346RU MAINTENANCE UTILITY

PROCESSING AND WARNING COUNTER

SINCE 2000 10 10

TOTAL PROCESSING COUNTER

| | | | |
|---|---|---|---|
| 18*24 cm | 0 | 08*10 inch | 12 |
| 24*30 cm | 0 | 10*12 inch | 1 |
| | | 14*14 inch (35*35 cm) | 2 |
| | | 14*17 inch (35*47 cm) | 1 |
| | | All IP SIZES | 16 |

SCN READ PROCESSING COUNTER 5

WARNING COUNTER

IP READ&HANDLING 0

CASSETTE SET OPERATION 0

ERASURE LAMP

SINCE 2000 10 10

TOTAL TIME FOR THE ERASURE LAMP LIGHTING 5 HOURS

When it is clicked, the range “A” is cleared.

Count start date or reset date for the range “A”

IP processing counter

Total IP processing counter

IP reading counter

Warning counter

Count start date or reset date for the erasure lamp lighting time

Erasure lamp lighting time

When it is clicked, the erasure lamp lighting time and date are cleared.

When it is clicked, the range "A", as well as the erasure lamp lighting time and date, is cleared.

### ● IP processing counter

Indicates the number of IPs that have undergone routine reading, primary erasure, and secondary erasure, on an IP size-by-size basis.

### ● IP reading counter

Indicates the number of IP reading operations performed for routine reading and primary erasure.

### ● Warning counter

Indicates the number of events that have not been processed due to occurrence of error (warning level).

**◇ *REFERENCE* ◇**

*Values in the fields displayed on the “EDIT HISTORY” window represent cumulative values starting from the count start date or the date when the values are cleared (“SINCE” date).*

## 2.4 EDIT CONFIGURATION

This function writes a portion of the configuration information of the RU into the FTP server, as well as into the flash ROM of the RU.

**◇ *REFERENCE* ◇**

---

*The timing of writing of the configuration information into the flash ROM of the RU differs depending on the software version.*

- *RU software version A06 (PC-MUTL 1.1) or earlier*
  *→ Written only into the FTP server of the CL.*
- *RF software version A07 (PC-MUTL 1.2) or later*
  *→ Written both into the FTP server of the CL and into the flash ROM of the RU.*

*It should be noted that with RU software version A06, the RU software is written, upon power ON of the RU, into its flash ROM by auto update function.*

---

## 2.4.1 EDIT CONFIGURATION Window

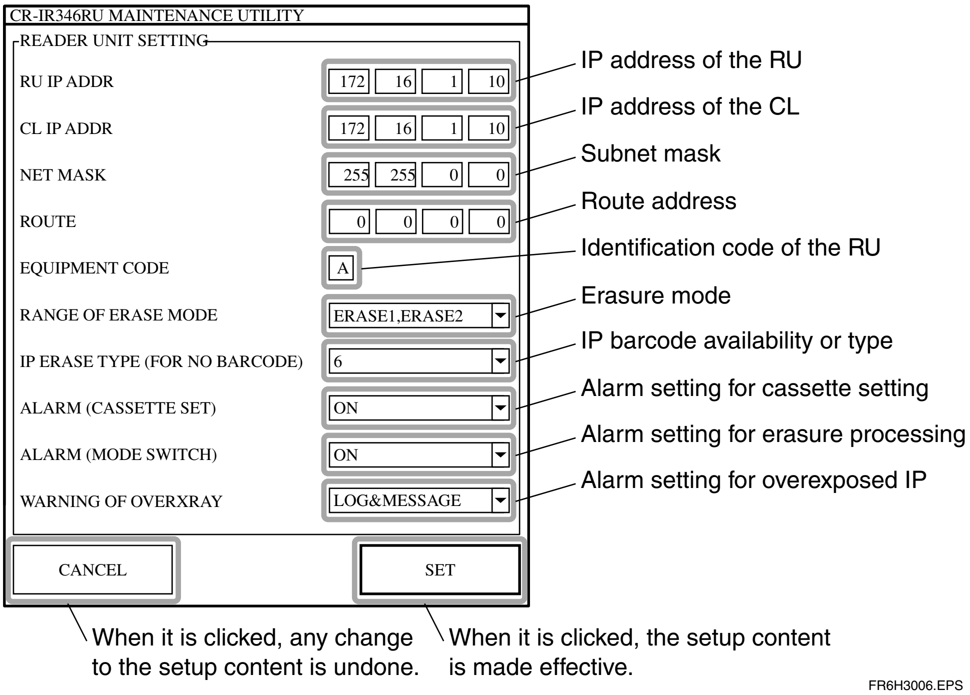
**◆ *NOTE* ◆**

*While the flash ROM of the RU is being updated, the panel indicators on the RU are lit, during which the RU should not be powered OFF.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

**◇*REFERENCE* ◇**

*The display of the EDIT CONFIGURATION window differs depending on the software version.*

### ● Window for RU software version A01 to A04 (PC-MUTL version 1.0)



CR-IR346RU MAINTENANCE UTILITY

READER UNIT SETTING

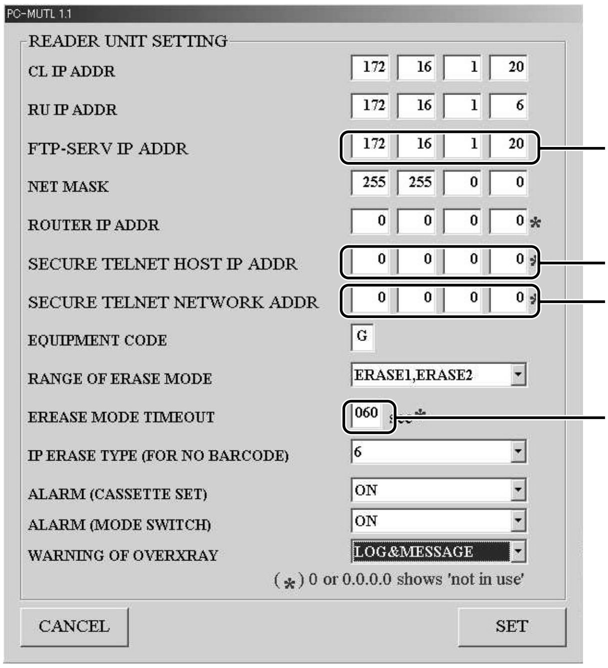
| | | |
|---|---|---|
| RU IP ADDR | 172 16 1 10 | IP address of the RU |
| CL IP ADDR | 172 16 1 10 | IP address of the CL |
| NET MASK | 255 255 0 0 | Subnet mask |
| ROUTE | 0 0 0 0 | Route address |
| EQUIPMENT CODE | A | Identification code of the RU |
| RANGE OF ERASE MODE | ERASE1,ERASE2 | Erasure mode |
| IP ERASE TYPE (FOR NO BARCODE) | 6 | IP barcode availability or type |
| ALARM (CASSETTE SET) | ON | Alarm setting for cassette setting |
| ALARM (MODE SWITCH) | ON | Alarm setting for erasure processing |
| WARNING OF OVERXRAY | LOG&MESSAGE | Alarm setting for overexposed IP |

CANCEL: When it is clicked, any change to the setup content is undone.

SET: When it is clicked, the setup content is made effective.

FR6H3006.EPS

## ● Window for RU software version A05 to A06 (PC-MUTL version 1.1)



PC-MUTL 1.1

READER UNIT SETTING

CL IP ADDR 172 16 1 20

RU IP ADDR 172 16 1 6

FTP-SERV IP ADDR 172 16 1 20

NET MASK 255 255 0 0

ROUTER IP ADDR 0 0 0 0 *

SECURE TELNET HOST IP ADDR 0 0 0 0 *

SECURE TELNET NETWORK ADDR 0 0 0 0 *

EQUIPMENT CODE G

RANGE OF ERASE MODE ERASE1,ERASE2

EREASE MODE TIMEOUT 060 sec *

IP ERASE TYPE (FOR NO BARCODE) 6

ALARM (CASSETTE SET) ON

ALARM (MODE SWITCH) ON

WARNING OF OVERXRAY LOG&MESSAGE

( * ) 0 or 0.0.0.0 shows 'not in use'

FTP server address

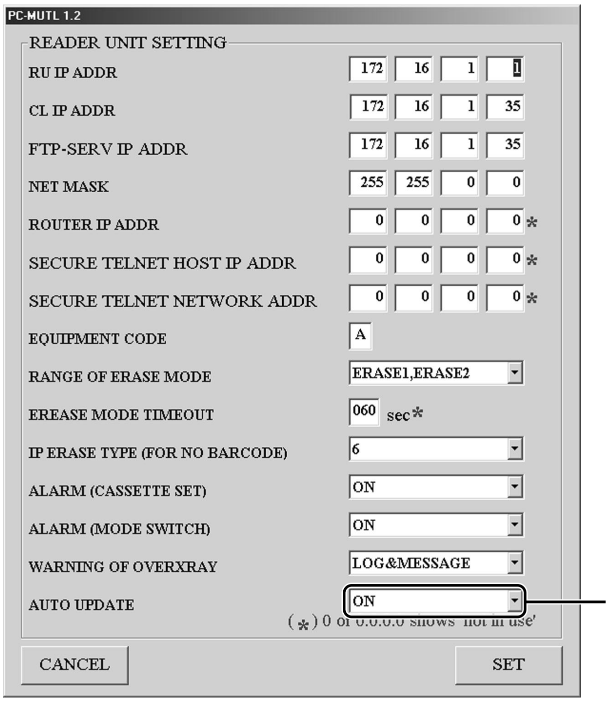
telnet-connectable IP address

telnet-connectable net mask

Erasure mode setup cancel time

FR6H3089.EPS

## ● Window for RU software version A07 or later (PC-MUTL version 1.2)



PC-MUTL 1.2

READER UNIT SETTING

RU IP ADDR 172 16 1 1

CL IP ADDR 172 16 1 35

FTP-SERV IP ADDR 172 16 1 35

NET MASK 255 255 0 0

ROUTER IP ADDR 0 0 0 0 *

SECURE TELNET HOST IP ADDR 0 0 0 0 *

SECURE TELNET NETWORK ADDR 0 0 0 0 *

EQUIPMENT CODE A

RANGE OF ERASE MODE ERASE1,ERASE2

EREASE MODE TIMEOUT 060 sec *

IP ERASE TYPE (FOR NO BARCODE) 6

ALARM (CASSETTE SET) ON

ALARM (MODE SWITCH) ON

WARNING OF OVERXRAY LOG&MESSAGE

AUTO UPDATE ON

( * ) 0 or 0.0.0.0 shows 'not in use'

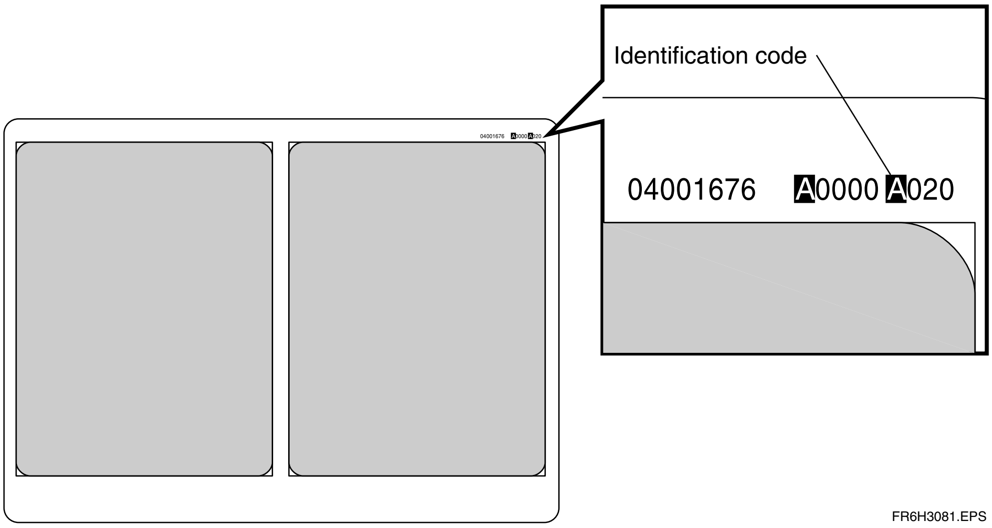
Auto update of RU software

FR6H3104.EPS

## 2.4.2 Setup Items Common to RU Software Version A01 or Later (PC-MUTL Version 1.0 or Later)

### ● Identification code of the RU

When multiple units of the RU are used, an identification code (alphanumerical characters) is set to allow the user to confirm, on the film, the RU that has performed image reading.



### ● Erasure mode

An erasure mode that is selectable by the erasure mode SW of the RU is set.

Example) When “ERASE1, ERASE2” is set:

By pressing the erasure mode SW, either primary erasure or secondary erasure may be selected.

### ● IP barcode availability or type

The erasure time for “no barcode” is set.

- “6” (default): Erase with an erasure time for type 6 IP.
- “5, 6”: Erase with an erasure time for type 5 IP.

◆ ***NOTES*** ◆

- *If type 5 IP is processed with “IP barcode availability or type” set to “6” (default), erasure failure will occur.*
- *When “IP barcode availability or type” is set to “5, 6”, type 6 IP takes as much erasure time as type 5 IP, so that the resulting processing time for type 6 IP becomes longer than specified.*

### ● Alarm setting for cassette setting

A setting is made to determine whether or not to sound an alarm when a cassette is set under condition where the CL screen does not allow cassette processing.

| | |
|---|---|
| • “ON” (default): | An alarm is sounded. |
| • “OFF”: | An alarm is not sounded. |

### ● Alarm setting for erasure processing

A setting is made to determine whether or not to sound an alarm when the erasure SW of the RU is pressed.

| | |
|---|---|
| • “ON” (default): | An alarm is sounded. |
| • “OFF”: | An alarm is not sounded. |

### ● Alarm setting for overexposed IP

A setting is made to determine whether or not to generate a log and/or display a message, when an overexposed IP is processed.

| | |
|---|---|
| • “LOG&MESSAGE” (default): | A log is generated and a message is displayed. |
| • “LOG”: | A log is generated and an alarm is not sounded. |
| • “NONE”: | A log is not generated and an alarm is not sounded. |

## 2.4.3 Setup Items Common to RU Software Version A05 or Later (PC-MUTL Version 1.1 or Later)

### ● FTP server address

The IP address of the FTP server is set.

### ● telnet-connectable IP address

The IP address that permits a connection with the RU via telnet is set.

When it is set to “0.0.0.0”, a connection can be established regardless of the IP address.

### ● telnet-connectable net mask

The network address that permits a connection with the RU via telnet is set.

When it is set to “0.0.0.0”, a connection can be established from any network.

### ● Erasure mode setup cancel time

The time, from changing the erasure mode setting to returning to the default erasure mode, is set in seconds.

When it is set to “0”, the setting remains changed.

### 2.4.4 Setup Items Common to RU Software Version A07 or Later (PC-MUTL Version 1.2 or Later)

● Auto update of RU software

- "ON" (default): The date is checked upon RU bootup, and auto update is performed.
- "OFF" : Auto update is not performed even if the dates are different.

Upon bootup of the RU, the contents of the software and configuration files are compared between the RU and FTP server. If their dates are different, the contents of the RU are automatically updated with the contents of the FTP server.

◆ ***NOTE*** ◆

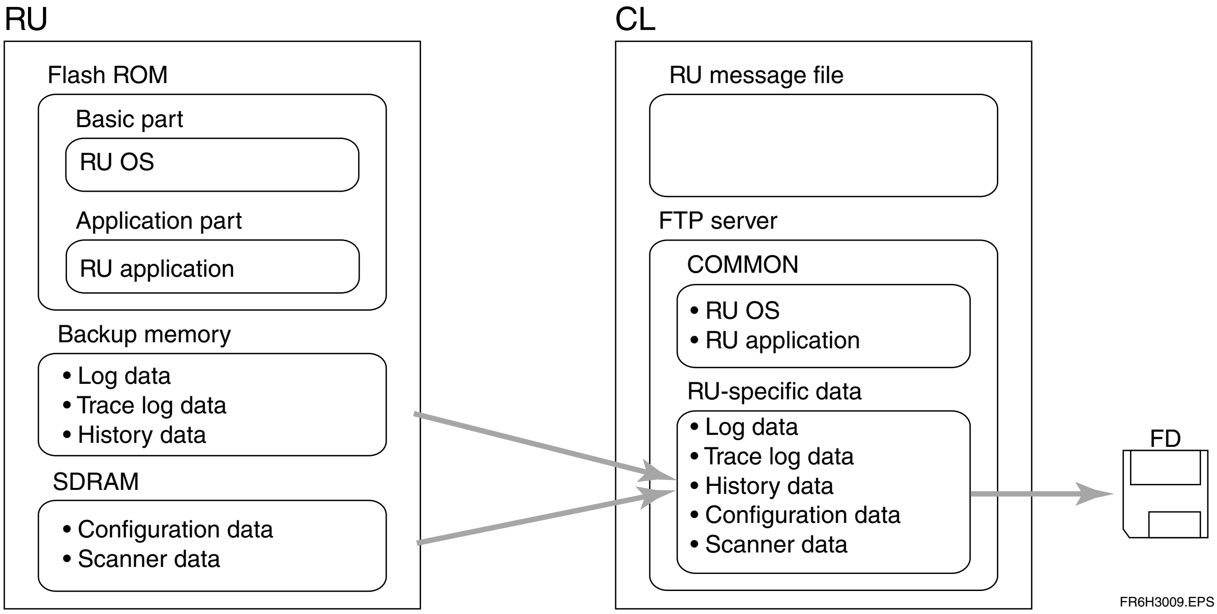
*Mainly for oversea use where the PC's time zone is set for automatically adjusting clock for daylight saving changes, this auto update feature should be turned OFF, as a rule.*
*If this feature is turned ON, installation is initiated automatically upon daylight saving change. If the user powers OFF the RU during that time, the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

◇ ***REFERENCE*** ◇

*The RU software auto update feature is intended to automatically update the RU software and configuration files by overwriting the contents of the FTP server.*
*This feature permits the RU software to be automatically updated by updating, from a remote site, the files residing on the FTP server.*

## 2.5 BACKUP

This function copies the configuration information and error log data from the RU to the FTP server, and from the FTP server to a floppy diskette (FD).


RU
Flash ROM
Basic part
RU OS
Application part
RU application
Backup memory
• Log data
• Trace log data
• History data
SDRAM
• Configuration data
• Scanner data
CL
RU message file
FTP server
COMMON
• RU OS
• RU application
RU-specific data
• Log data
• Trace log data
• History data
• Configuration data
• Scanner data
FD

FR6H3009.EPS

### 2.5.1 Backup Items

- **"ERROR LOG":**

  Log data is backed up.

- **"CONFIGURATION":**

  Configuration data is backed up.

- **"TRACE LOG":**

  Trace log data (design analysis information) is backed up.

- **"HISTORY LOG":**

  History data (processing counter and erasure lamp lighting time) is backed up.

- **"SCN ALL DATA":**

  All scanner data is backed up.

- **"SCN LIGHT COLLECTING DATA":**

  Of the scanner data, light-collecting data is backed up.

- **"SCN OPTICAL DATA":**

  Of the scanner data, optical data is backed up.

### 2.5.2 Procedures for BACKUP

An example is presented below where ERROR LOG of ru2 is backed up.

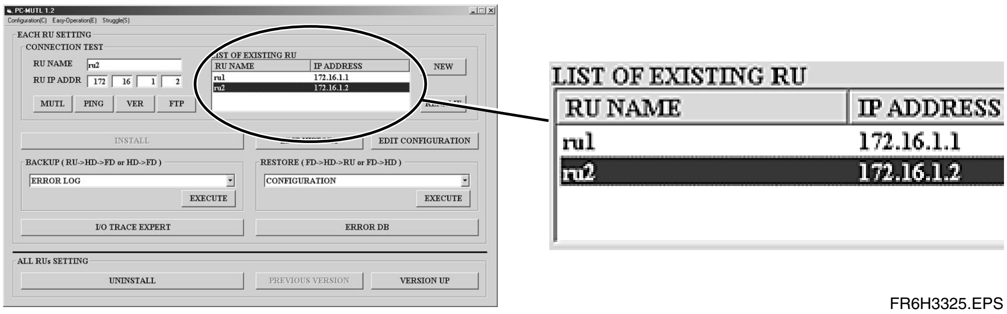
***◆ NOTE ◆***

*When “SCN ALL DATA”, “SCN LIGHT COLLECTING DATA”, or “SCN OPTICAL DATA” is backed up, the flash ROM of the RU is accessed, so that the RU should not be powered OFF during that time.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU”, select a RU to be backed up.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
RU NAME ru2
RU IP ADDR 172 16 1 2
MUTL
PING
VER
FTP
LIST OF EXISTING RU
RU NAME
IP ADDRESS
ru1 172.16.1.1
ru2 172.16.1.2
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

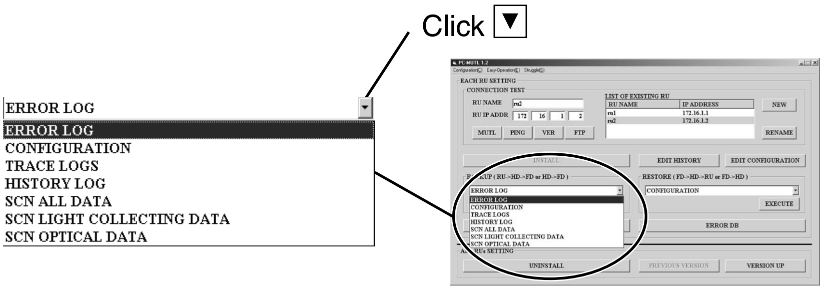
FR6H3325.EPS

(4) Click on the [FTP] button.

On the DOS prompt window displayed, check “RU NAME”, “HISTORY.LOG”, and “RESULT: OK”.

☞ “2.1.4 FTP: Confirming the FTP Server of the RU”

(5) From the BACKUP pull-down menu, select an item to be backed up.

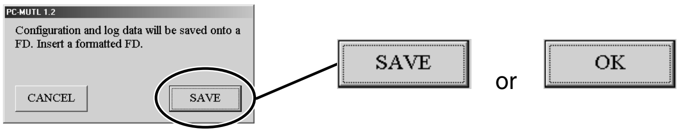

Click ▼
ERROR LOG
ERROR LOG
CONFIGURATION
TRACE LOGS
HISTORY LOG
SCN ALL DATA
SCN LIGHT COLLECTING DATA
SCN OPTICAL DATA

FR6H3205.EPS

(6) Click on the [EXECUTE] button.

A dialog box appears to prompt you to insert a formatted floppy diskette.

(7) Put a formatted floppy diskette into the CL, and click on the [SAVE] or [OK] button.

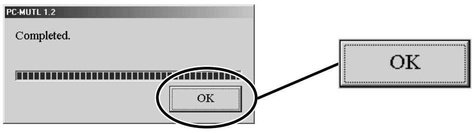


Configuration and log data will be saved onto a FD. Insert a formatted FD.

FR6H3206.EPS

The backup starts, and when it is completed, the following dialog box appears.

(8) Click on the [OK] button, and take out the floppy diskette.



Completed.

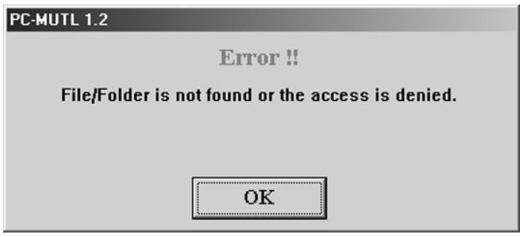
FR6H3207.EPS

## 2.5.3 Errors That May Occur during BACKUP and Their Probable Causes

- RU is not connected

If the RU has not been powered ON or if no network connection has been established with the RU, the following error message appears.

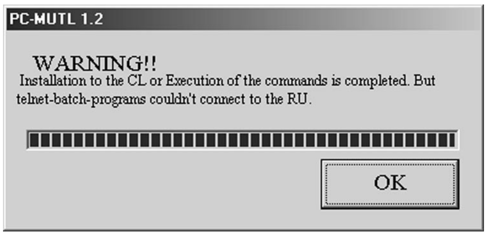
In that case, check the network connection, and then power ON the RU.



Error !!

File/Folder is not found or the access is denied.

FR6H3158.EPS



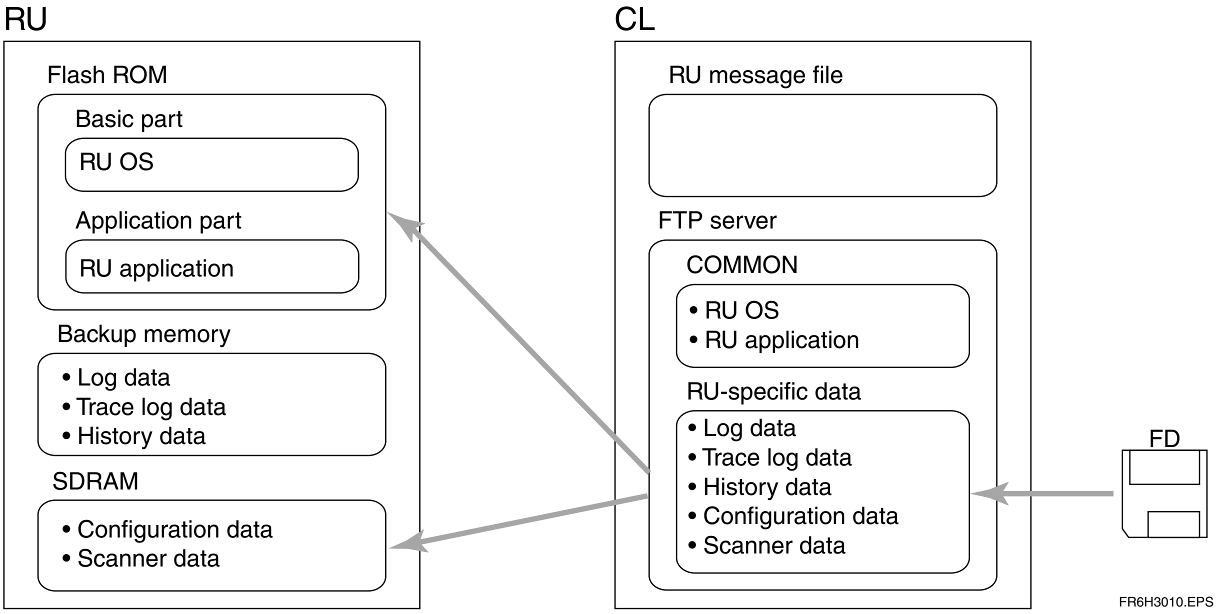
WARNING!!

Installation to the CL or Execution of the commands is completed. But telnet-batch-programs couldn't connect to the RU.

FR6H3208.EPS

## 2.6 RESTORE

This function installs the configuration information and machine-specific data from the floppy diskette (FD) into the RU-specific data area of the FTP server and copies it from the FTP server to the flash ROM of the RU.


RU
Flash ROM
Basic part
RU OS
Application part
RU application
Backup memory
• Log data
• Trace log data
• History data
SDRAM
• Configuration data
• Scanner data
CL
RU message file
FTP server
COMMON
• RU OS
• RU application
RU-specific data
• Log data
• Trace log data
• History data
• Configuration data
• Scanner data
FD
FR6H3010.EPS

### 2.6.1 Restore Items

- **“CONFIGURATION”:**

  Configuration data is restored.

- **“HISTORY LOG”:**

  History data (processing counter and erasure lamp lighting time) is restored.

- **“SCN ALL DATA”:**

  All scanner data is restored.

- **“SCN LIGHT COLLECTING DATA”:**

  Of the scanner data, light-collecting data is restored.

- **“SCN OPTICAL DATA”:**

  Of the scanner data, optical data is restored.

## 2.6.2 Procedures for RESTORE

**◆ *NOTE* ◆**

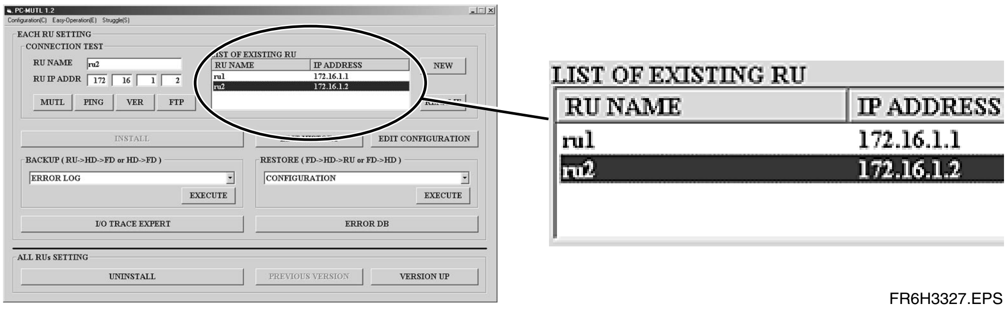
*When “SCN ALL DATA”, “SCN LIGHT COLLECTING DATA”, or “SCN OPTICAL DATA” is restored, the flash ROM of the RU is accessed, so that the RU should not be powered OFF during that time.*

*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU”, select a RU to be restored.



RU NAME: ru2

RU IP ADDR: 172 16 1 2

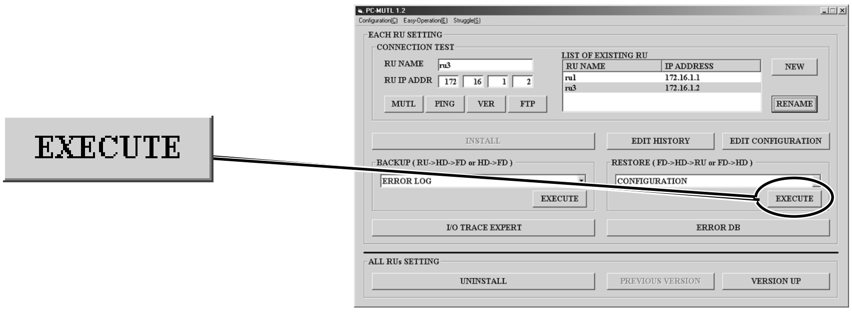
| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
LIST OF EXISTING RU

FR6H3327.EPS

(4) From the RESTORE pull-down menu, select an item to be restored.

(5) Click on the [EXECUTE] button.



EXECUTE
PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
RU NAME ru3
RU IP ADDR 172 16 1 2
LIST OF EXISTING RU
RU NAME
IP ADDRESS
ru1 172.16.1.1
ru3 172.16.1.2
NEW
RENAME
MUTL
PING
VER
FTP
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
ERROR LOG
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
CONFIGURATION
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

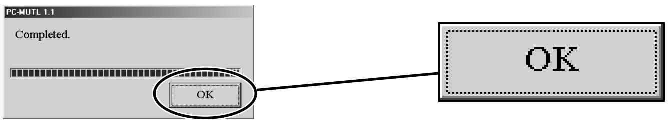
FR6H3332.EPS

A dialog box appears to prompt you to insert the floppy diskette that contains the data to be resorted.

(6) Put into the CL the floppy diskette used for backup, and click on the [OK] button.

The restore starts, and when it is completed, the following dialog box appears.

(7) Click on the [OK] button, and take out the floppy diskette.



Completed.

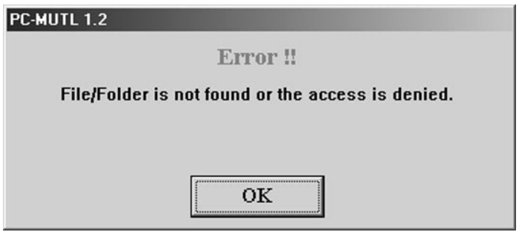
FR6H3333.EPS

## 2.6.3 Errors That May Occur during RESTORE and Their Probable Causes

- RU is not connected

If the RU has not been powered ON or if no network connection has been established with the RU, the following error message appears.

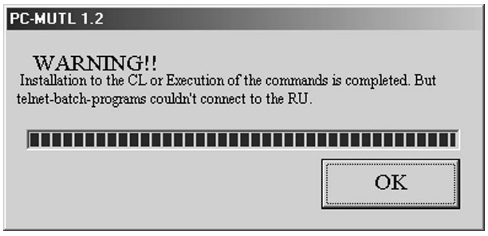
In that case, check the network connection, and then power ON the RU.



Error !!

File/Folder is not found or the access is denied.

FR6H3158.EPS



WARNING!!

Installation to the CL or Execution of the commands is completed. But telnet-batch-programs couldn't connect to the RU.

FR6H3208.EPS

## 2.7 UNINSTALL

This function removes the RU software from the FTP server.

Once the removal is completed, the “LIST OF EXISTING RU” list box and “RU IP ADDR” become empty.

**◆ *NOTES* ◆**

- *In an N-to-N connection setup, if UNINSTALL is executed, the software and configuration data for all the RUs will be deleted from the FTP server.*
- *Be sure to execute INSTALL after UNINSTALL has been performed.*

### ■ Uninstalling the RU software

When the RU software is uninstalled, the contents in the “C:\ProgramFiles\FujiFilm\FCR\CR-IR346\SYSTEM” directory on the CL are deleted.

***CAUTIONS***

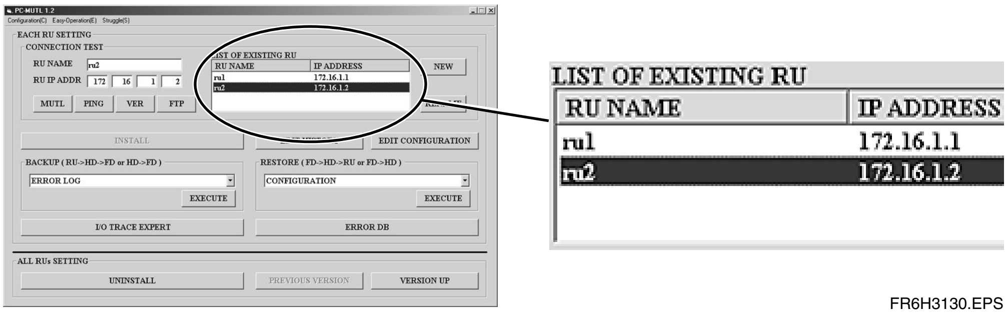
- *Before executing UNINSTALL, be sure to take note of the IP addresses (user settings) of the RU, CL, and FTP server.*
  *Once UNINSTALL is executed, all the user settings are lost.*
- *For the RU connected to the CL, back up the following files.*
  *Those files must be resorted after installation.*
  *- CONFIGURATION*
  *- HISTORY LOG*
  *- SCN ALL DATA*

*For multiple RUs, it is necessary to identify which file belongs to which RU.*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU” of the PC-MUTL, select a desired RU.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 16 1 2

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3130.EPS

(4) Click on the [PING] button. Referring to the DOS prompt window displayed, verify that the result is 100% successful.

(5) For all the RUs connected to the CL, repeat steps (3) and (4).

(6) Back up the following files for the RU to be uninstalled.

- CONFIGURATION
- HISTORY LOG
- SCN ALL DATA

☞ “2.5.2 Procedures for BACKUP”

(7) Clear the backup memory data.

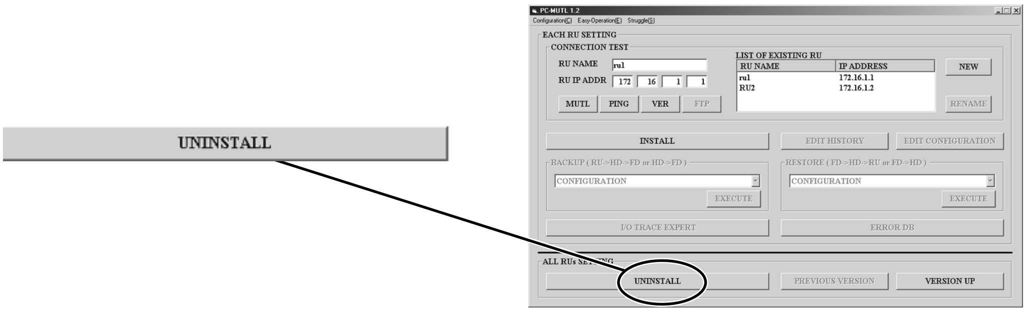
☞ “2.13 Clear Backup Data, ■ Procedures for Clear Backup Data”

**CAUTION**

*If the software is to be updated from any version earlier than A04 to version A05 or later, be sure to clear the backup memory data. If it is not cleared, a software error will occur, so that the RU will hang up.*

(8) Click on the [UNINSTALL] button.

The uninstall of the RU software starts, and when it is completed, the following window appears.


UNINSTALL
PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru1

RU IP ADDR: 172 16 1 1

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

BACKUP: CONFIGURATION

RESTORE: CONFIGURATION

FR6H3334.EPS

(9) Click on the [OK] button.

The PC-MUTL window appears back on screen, where all the RUs registered in “LIST OF EXISTING RU” have been cleared.

## 2.8 PREVIOUS VERSION/VERSION UP

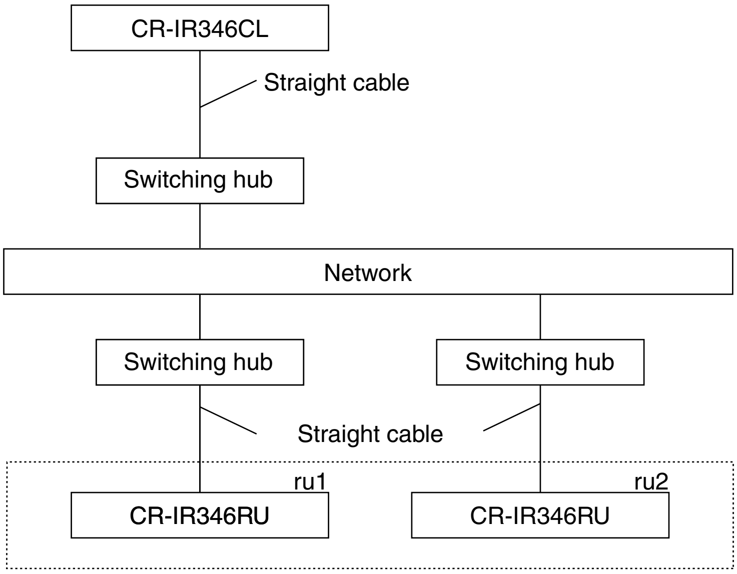
This function puts the RU software back to its previous version, or updates its version.

**◆ *NOTES* ◆**

- *If the RU indicated in “LIST OF EXISTING RU” is not connected, or if an error occurs during version update, the FTP server will be version-updated but the flash ROM will not.*
- *Do not power OFF the CL/RU during version update. If power is turned OFF during version update, the machine will no longer boot up.*
- *Before performing the install procedures, quit all the applications running on the CL.*
- *In an N-to-N connection setup, if PREVIOUS VERSION/VERSION UP is executed, the RU software will be sequentially downdated for the RUs connected, one after another. It takes about one and one-half minutes for a single unit.*

  *Do not power OFF the CL and RUs until the installation is completed for all the RUs. After the installation, be sure to check the software versions for all the RUs to verify that the version downdate has been completed.*

  *Example: In a two-unit connection setup, if ru2 and ru1 have been registered in order named in “LIST OF EXISTING RU”, then installation is performed for ru2 and ru1 in that order named.*



FR6H3200.EPS

- *If the name of the RU is changed by using the [RENAME] button, PREVIOUS VERSION can no longer be executed.*

## 2.8.1 PREVIOUS VERSION: RU Software Version 07 or Later

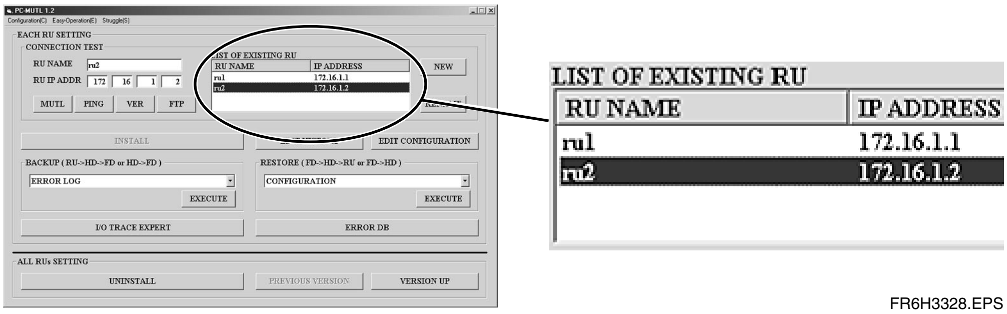
**CAUTIONS**

- *In an N-to-N connection setup, if the RU software is to be downdated to the previous version, be sure to execute “ping”, before downdating, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be downdated.*
- *If the software is to be updated from any version earlier than A04 to version A05 or later, be sure to clear the backup memory data. If it is not cleared, a software error will occur, so that the RU will hang up.*
  *☞ “2.13 Clear Backup Data, ■ Procedures for Clear Backup Data”*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU” of the PC-MUTL, select a desired RU.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2
RU IP ADDR: 172 16 1 2

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3328.EPS

(4) Click on the [PING] button.

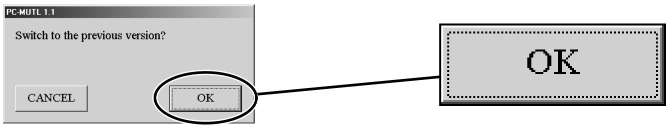
Referring to the DOS prompt window displayed, verify that the result is 100% successful.

(5) For all the RUs connected to the CL, repeat steps (3) and (4).

(6) Click on the [PREVIOUS VERSION] button.

A dialog box appears to ask whether to downdate the version.

(7) Click on the [OK] button.


PC-MUTL 1.1

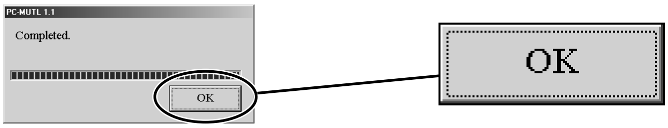
Switch to the previous version?

FR6H3196.EPS

The process starts for downdating the RU software version.

When it is completed, the following dialog box appears.

(8) Click on the [OK] button.


PC-MUTL 1.1

Completed.

FR6H3194.EPS

The PC-MUTL window appears back on screen.

(9) Exit the PC-MUTL.

(10) Start the CL software.

The process starts for downdating the RU software version for the first RU.

During that time, all the panel indicators on the first RU are lit, with an audible alarm generated.

After about two minutes have passed, the version downdate is completed for the first RU, and a message appears on the CR screen to prompt you to reboot the RU.

### ⚠ CAUTION

*While the version downdate is being executed, do not power OFF the RU.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

(11) Click on “Reboot”.

A RU boot-up message appears on the monitor of the CL, and after about one minute has passed, the first RU becomes ready for operation.

The process then starts for downdating the RU software version for the next RU.

Click on “Reboot” the number of times corresponding to the number of RUs.

## 2.8.2 PREVIOUS VERSION: RU Software Version 07 or Later

**CAUTIONS**

- *In an N-to-N connection setup, if the RU software is to be updated, be sure to execute "ping", before version update, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be updated.*
- *If the software is to be updated from any version earlier than A04 to version A05 or later, be sure to clear the backup memory data. If it is not cleared, a software error will occur, so that the RU will hang up.*
  *☞ "2.13 Clear Backup Data, ■ Procedures for Clear Backup Data"*

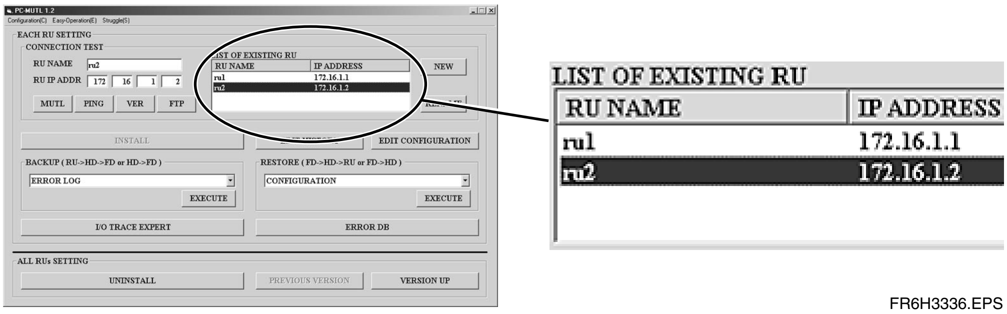
**◇REFERENCE◇**

*For software version update to A07 in an N-to-N connection setup, sequentially perform version update on the RUs registered in "LIST OF EXISTING RU", one after another.*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From "LIST OF EXISTING RU" of the PC-MUTL, select a desired RU.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2
RU IP ADDR: 172 16 1 2
BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

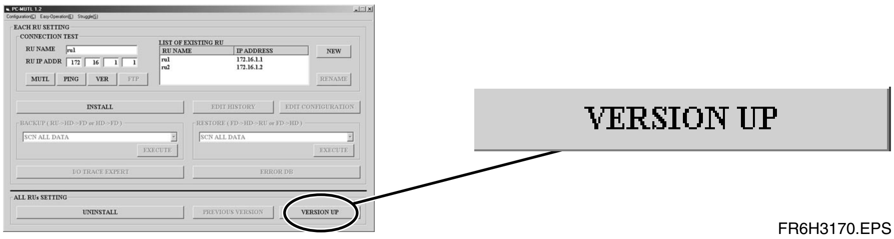
FR6H3336.EPS

(4) Click on the [PING] button.

Referring to the DOS prompt window displayed, verify that the result is 100% successful.

(5) For all the RUs connected to the CL, repeat steps (3) and (4).

(6) Click on the [VERSION UP] button.


PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
VERSION UP

RU NAME: ru1
RU IP ADDR: 172 16 1 1
BACKUP ( RU->HD->FD or HD->FD ): SCN ALL DATA
RESTORE ( FD->HD->RU or FD->HD ): SCN ALL DATA

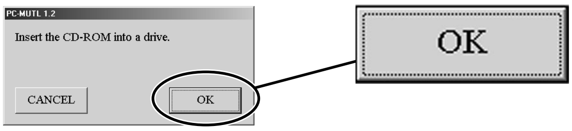
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3170.EPS

A dialog box appears to prompt you to insert the CD-ROM.

(7) Put the Ver.up CD-R into the CL, and click on the [OK] button.

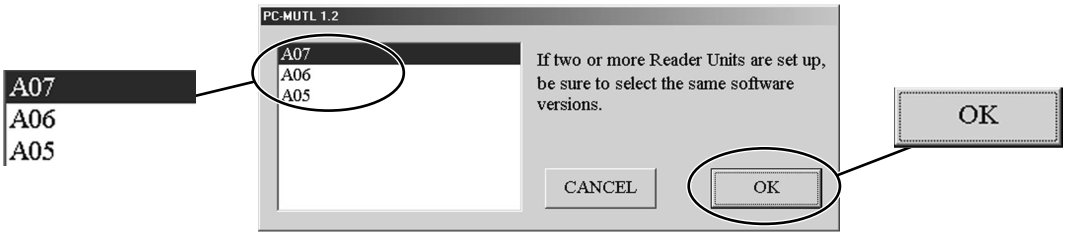


Insert the CD-ROM into a drive.

FR6H3172.EPS

A dialog box appears to check the version of the software to be installed.

(8) Select the desired version of the software, and click on the [OK] button.

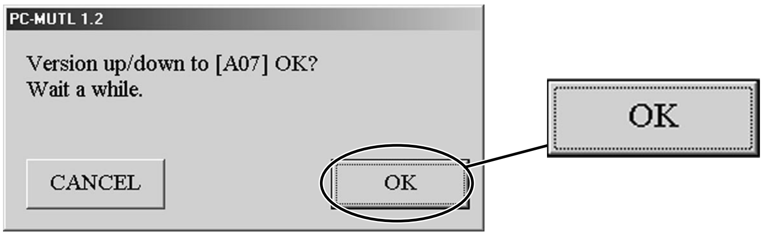


If two or more Reader Units are set up, be sure to select the same software versions.

FR6H3174.EPS

A window appears to confirm the execution of version update.

(9) Click on the [OK] button.



Version up/down to [A07] OK?
Wait a while.

FR6H3176.EPS

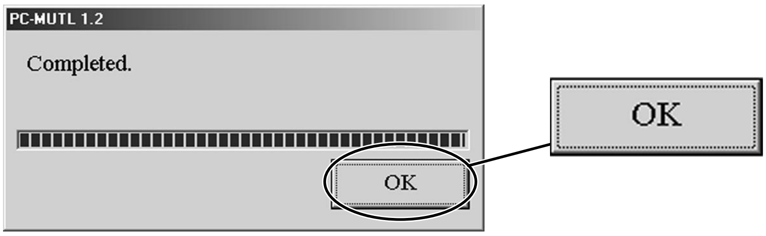
The version update of the RU software starts.

During that time, all the panel indicators on the first RU are lit, with an audible alarm generated.

After about two minutes have passed, the version update is completed for the first RU, and then the version update for the next RU starts.

When the version update for all the RUs connected to the CL is completed, the following dialog box appears.

(10) Click on the [OK] button.



Completed.

FR6H3178.EPS

The PC-MUTL window appears back on screen.

### 2.8.3 VERSION UP: RU Software Version A06 or Earlier

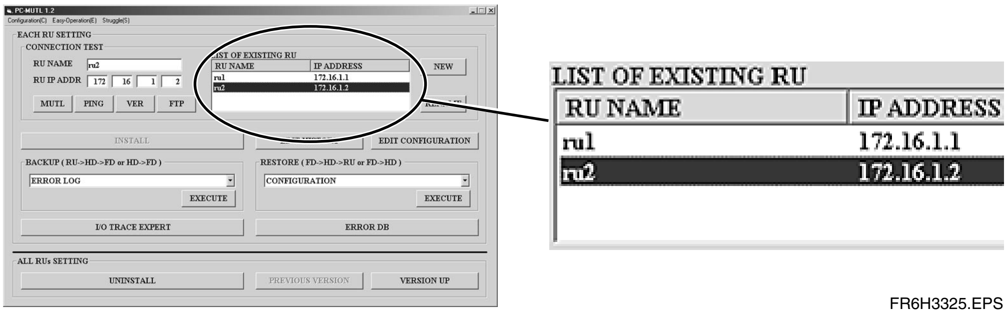
**CAUTIONS**

- *In an N-to-N connection setup, if the RU software is to be updated, be sure to execute "PING", before version update, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be updated.*
- *If the software is to be updated from any version earlier than A04 to version A05 or later, be sure to clear the backup memory data. If it is not cleared, a software error will occur, so that the RU will hang up.*
  *☞ "2.13 Clear Backup Data, ■ Procedures for Clear Backup Data"*

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From "LIST OF EXISTING RU" of the PC-MUTL, select a desired RU.


PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME ru2

RU IP ADDR 172 16 1 2

ERROR LOG

CONFIGURATION

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3325.EPS

(4) Click on the [PING] button.

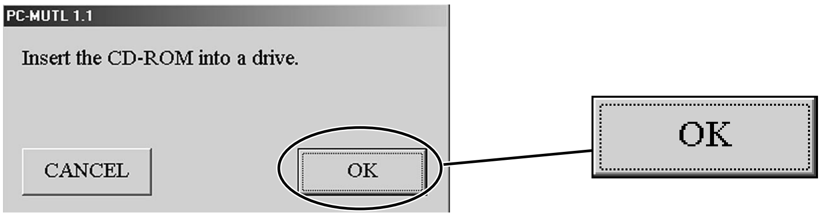
Referring to the DOS prompt window displayed, verify that the result is 100% successful.

(5) For all the RUs connected to the CL, repeat steps (3) and (4).

(6) Click on the [VERSION UP] button.

A dialog box appears to prompt you to insert the CD-ROM.

(7) Put the Ver.up CD-R into the CL, and click on the [OK] button.

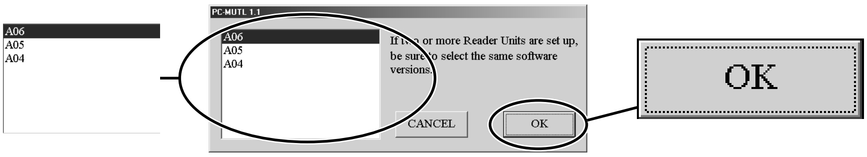

PC-MUTL 1.1
CANCEL
OK
OK

Insert the CD-ROM into a drive.

FR6H3186.EPS

A dialog box appears to check the version of the software to be installed.

(8) Select the desired version of the software, and click on the [OK] button.

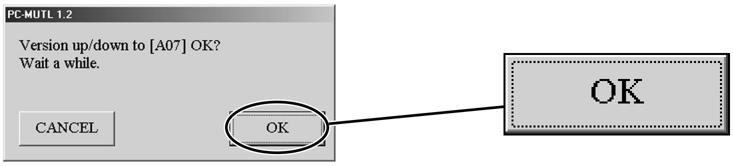


If two or more Reader Units are set up, be sure to select the same software versions.

FR6H3188.EPS

A window appears to confirm the execution of version update.

(9) Click on the [OK] button.



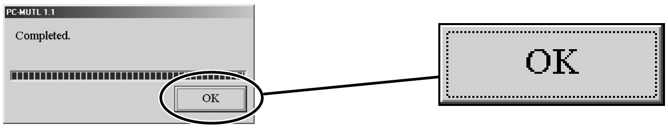
Version up/down to [A07] OK?
Wait a while.

FR6H3190.EPS

The version update of the RU software starts.

When it is completed, the following dialog box appears.

(10) Click on the [OK] button.



Completed.

FR6H3192.EPS

The PC-MUTL window appears back on screen.

(11) Exit the PC-MUTL.

(12) Power OFF the RU and then back ON.

(13) Start the CL software.

The version update of the RU software starts for the first RU.

During that time, all the panel indicators on the first RU are lit, with an audible alarm generated.

After about two minutes have passed, the version update is completed for the first RU, and a message appears on the screen of the CL to prompt you to reboot the RU.

⚠ **CAUTION**

*While the version update is being executed, do not power OFF the RU.*
*If power is turned OFF, the contents of the flash ROM of the RU will be corrupted, so that the RU will no longer boot up.*

(14) Click on “Reboot”.

A RU boot-up message appears on the monitor of the CL, and after about one minute has passed, the first RU becomes ready for operation.

The process then starts for RU software version update for the next RU.

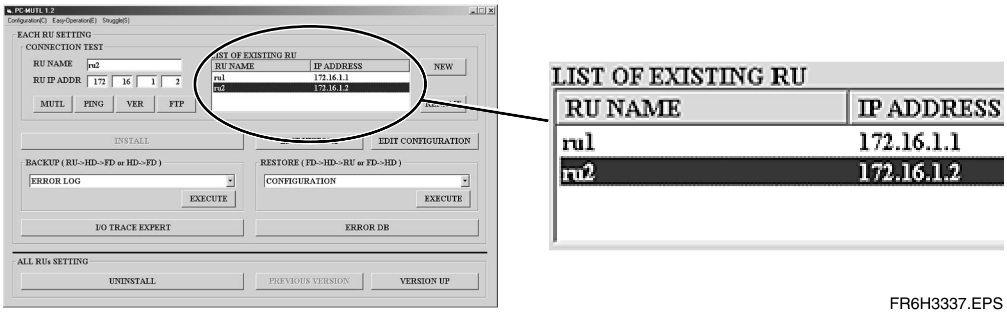
Click on “Reboot” the number of times corresponding to the number of RUs.

## 2.8.4 PREVIOUS VERSION/VERSION UP: Checks after RU Software Version Up

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU” of the PC-MUTL, select a desired RU.


PC-MUTL 1.2
Configuration(C)
Easy-Operation(E)
Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2

RU IP ADDR: 172 16 1 2

BACKUP: ERROR LOG

RESTORE: CONFIGURATION

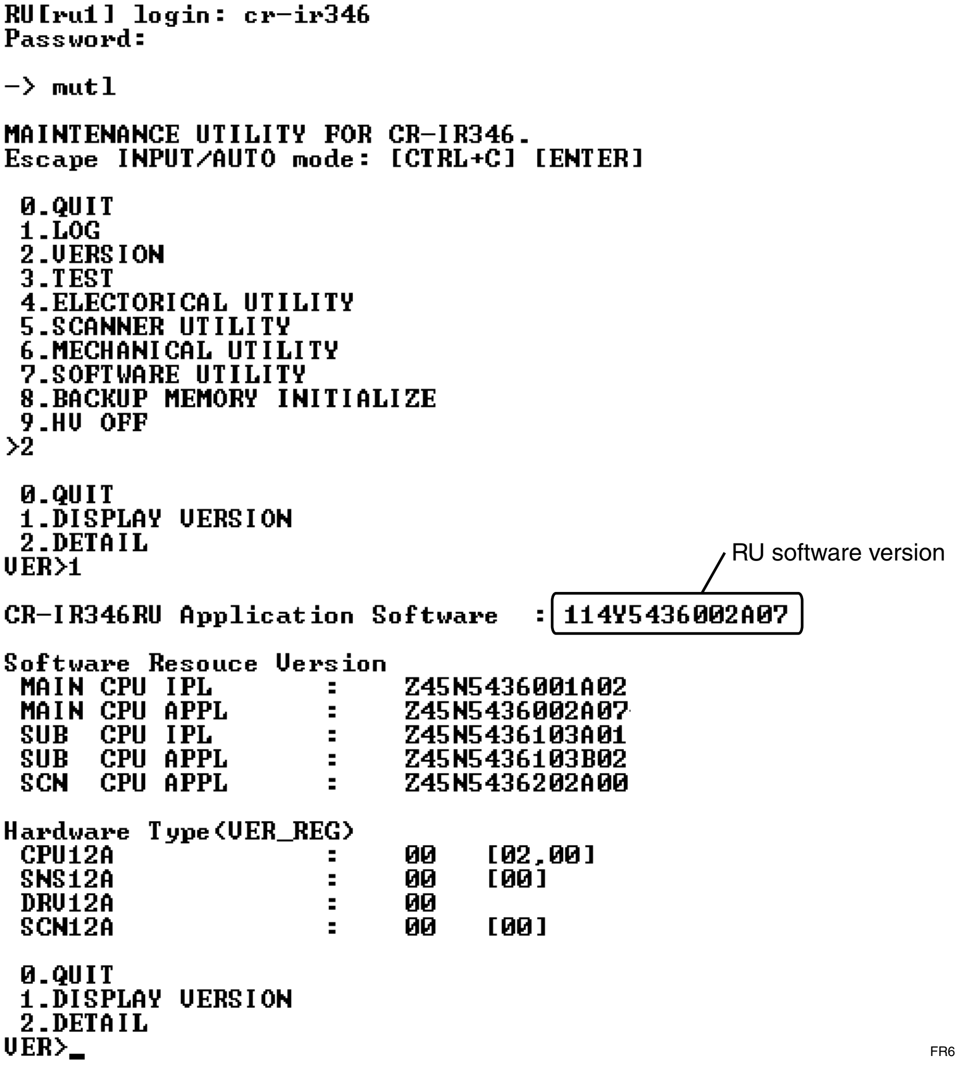
LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3337.EPS

(4) Click on the [VER] button.

As a DOS prompt window appears, make sure that the version update has been executed.


RU software version

```
RU[ru1] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.VERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HV OFF
>2

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>1

CR-IR346RU Application Software   : 114Y5436002A07

Software Resouce Version
 MAIN CPU IPL       :    Z45N5436001A02
 MAIN CPU APPL      :    Z45N5436002A07
 SUB  CPU IPL       :    Z45N5436103A01
 SUB  CPU APPL      :    Z45N5436103B02
 SCN  CPU APPL      :    Z45N5436202A00

Hardware Type(VER_REG)
 CPU12A             :    00   [02,00]
 SNS12A             :    00   [00]
 DRV12A             :    00
 SCN12A             :    00   [00]

 0.QUIT
 1.DISPLAY VERSION
 2.DETAIL
VER>_
```

FR6H3338.EPS

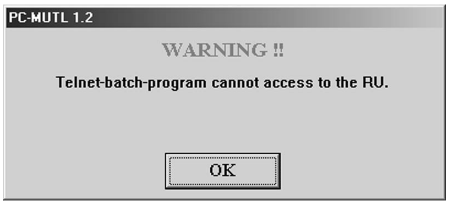
(5) In an N-to-N connection setup, perform steps (3) and (4) for all the RUs where the version update has been executed.

## 2.8.5 PREVIOUS VERSION/VERSION UP: Errors That May Occur during Version Up and Their Probable Causes

### ● RU is not connected

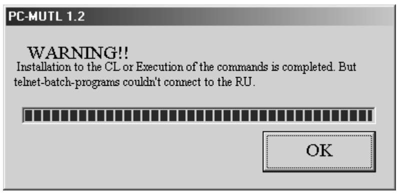
If the RU has not been powered ON or if no network connection has been established with the RU, the following error message appears.

In that case, check the network connection, and then power ON the RU.



```
WARNING !!
Telnet-batch-program cannot access to the RU.
```

FR6H3180.EPS



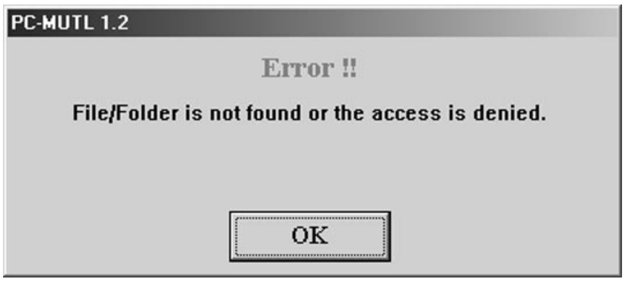
```
WARNING!!
Installation to the CL or Execution of the commands is completed. But
telnet-batch-programs couldn't connect to the RU.
```

FR6H3182.EPS

### ● RU name designated is incorrect or FTP server is not set up

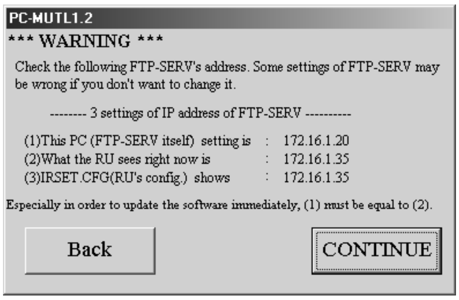
If the RU name designated is incorrect or if the FTP server has not been set up, the following message appears.

In that case, click on the [Back] or [CONTINUE] button to go back to the previous screen, and perform the procedures all over again after checking the IP address and FTP server.



```
Error !!
File/Folder is not found or the access is denied.
```

FR6H3342.EPS



```
*** WARNING ***
Check the following FTP-SERV's address. Some settings of FTP-SERV may
be wrong if you don't want to change it.

-------- 3 settings of IP address of FTP-SERV ----------

(1)This PC (FTP-SERV itself)  setting is  :  172.16.1.20
(2)What the RU sees right now is          :  172.16.1.35
(3)IRSET.CFG(RU's config.)  shows         :  172.16.1.35

Especially in order to update the software immediately, (1) must be equal to (2).
```

FR6H3343.EPS

# 2.9 ERROR DB

This function enables you to check error names and occurrence conditions by referring to the error log data of the RU. It also allows for adding memos to error messages and viewing the detail information and analysis flows.

**CAUTIONS**

- *Do not install software programs, such as Adobe Acrobat Reader 4.0, on the PC that is used as the CL or FTP server. If such programs are installed, the CL or FTP server may not function normally.*
- *It is a new feature added to software version A05 or later.*

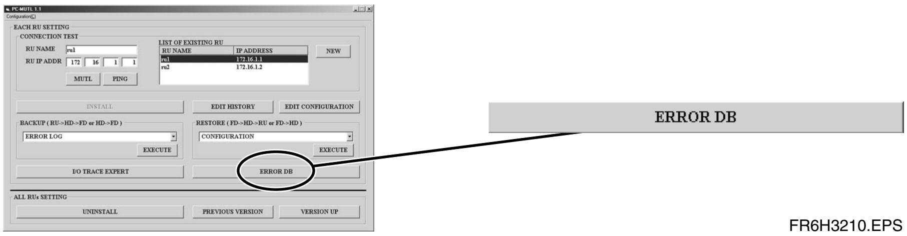
## 2.9.1 Procedures for Starting ERROR DB

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From "LIST OF EXISTING RU" of the PC-MUTL, select a desired RU.

(4) Click on the [ERROR DB] button.


PC-MUTL 1.1
Configuration(C)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
ERROR DB

RU NAME: ru1
RU IP ADDR: 172 16 1 1

LIST OF EXISTING RU

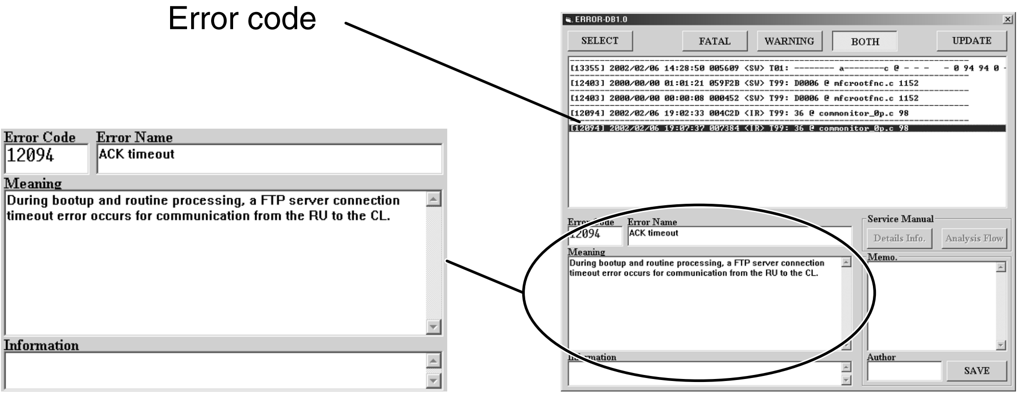
| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

FR6H3210.EPS

(5) Click on a desired error code.

An explanation for the error code selected is presented.


Error code
ERROR-DB1.0
SELECT
FATAL
WARNING
BOTH
UPDATE
Service Manual
Details Info.
Analysis Flow
Memo.
Author
SAVE
Information

```
[13355] 2002/02/06 14:28:50 005609 <SW> T01: -------- a--------c @ - - -   - 0 94 94 0 -
[12403] 2000/00/00 01:01:21 059F2B <SW> T99: D0006 @ mfcrootfnc.c 1152
[12403] 2000/00/00 00:00:08 000452 <SW> T99: D0006 @ mfcrootfnc.c 1152
[12094] 2002/02/06 19:02:33 004C2D <IR> T99: 36 @ commonitor_0p.c 98
[12094] 2002/02/06 19:07:37 007384 <IR> T99: 36 @ commonitor_0p.c 98
```

Error Code: 12094
Error Name: ACK timeout
Meaning: During bootup and routine processing, a FTP server connection timeout error occurs for communication from the RU to the CL.

FR6H3212.EPS

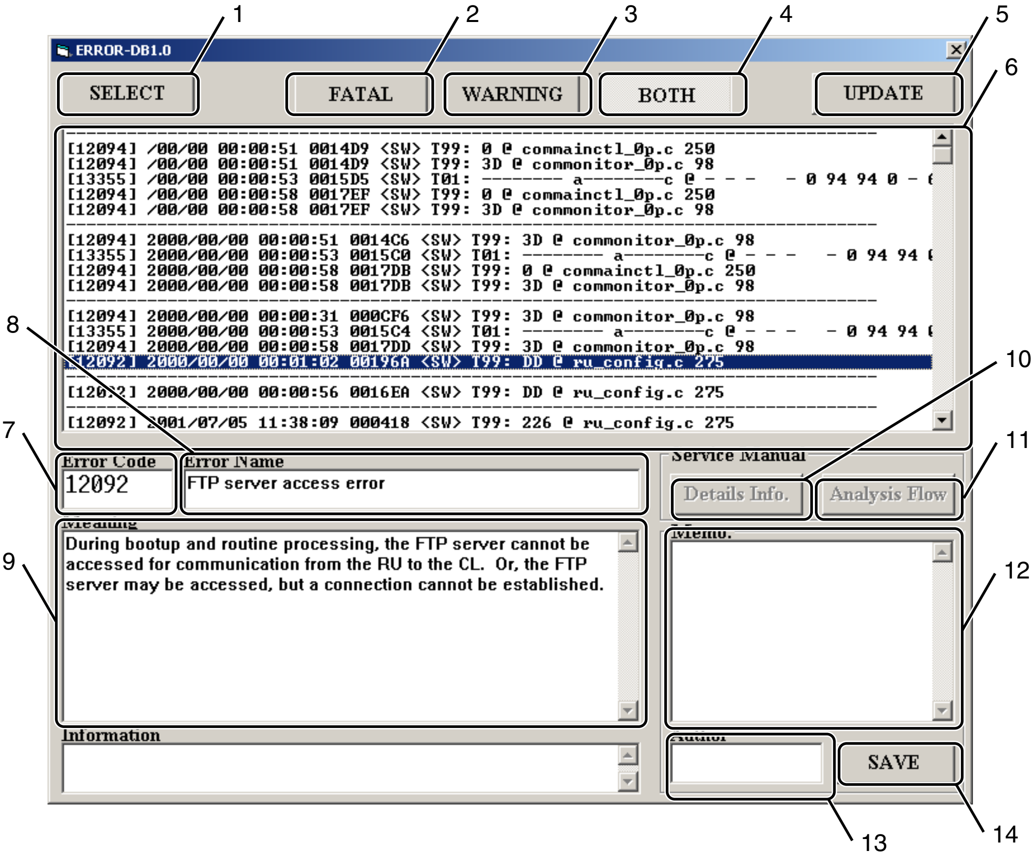
(6) Click on the [UPDATE] button.

(7) Close the ERROR-DB window.

(8) Click on the [ERROR DB] button.

The latest contents of ERROR DB are presented.

## 2.9.2 ERROR-DB Window


1
2
3
4
5
6
ERROR-DB1.0
SELECT
FATAL
WARNING
BOTH
UPDATE
8
10
7
11
Error Code
Error Name
Service Manual
Details Info.
Analysis Flow
9
Meaning
Memo.
12
Information
Author
SAVE
13
14

```
------------------------------------------------------------------------------------------
[12094] /00/00 00:00:51 0014D9 <SW> T99: 0 @ commainctl_0p.c 250
[12094] /00/00 00:00:51 0014D9 <SW> T99: 3D @ commonitor_0p.c 98
[13355] /00/00 00:00:53 0015D5 <SW> T01: --------- a---------c @ - - -    - 0 94 94 0 -
[12094] /00/00 00:00:58 0017EF <SW> T99: 0 @ commainctl_0p.c 250
[12094] /00/00 00:00:58 0017EF <SW> T99: 3D @ commonitor_0p.c 98
------------------------------------------------------------------------------------------
[12094] 2000/00/00 00:00:51 0014C6 <SW> T99: 3D @ commonitor_0p.c 98
[13355] 2000/00/00 00:00:53 0015C0 <SW> T01: --------- a---------c @ - - -    - 0 94 94
[12094] 2000/00/00 00:00:58 0017DB <SW> T99: 0 @ commainctl_0p.c 250
[12094] 2000/00/00 00:00:58 0017DB <SW> T99: 3D @ commonitor_0p.c 98
------------------------------------------------------------------------------------------
[12094] 2000/00/00 00:00:31 000CF6 <SW> T99: 3D @ commonitor_0p.c 98
[13355] 2000/00/00 00:00:53 0015C4 <SW> T01: --------- a---------c @ - - -    - 0 94 94
[12094] 2000/00/00 00:00:58 0017DD <SW> T99: 3D @ commonitor_0p.c 98
[12092] 2000/00/00 00:01:02 00196A <SW> T99: DD @ ru_config.c 275
------------------------------------------------------------------------------------------
[12092] 2000/00/00 00:00:56 0016EA <SW> T99: DD @ ru_config.c 275
------------------------------------------------------------------------------------------
[12092] 2001/07/05 11:38:09 000418 <SW> T99: 226 @ ru_config.c 275
```

Error Code: 12092

Error Name: FTP server access error

Meaning: During bootup and routine processing, the FTP server cannot be accessed for communication from the RU to the CL. Or, the FTP server may be accessed, but a connection cannot be established.

FR6H3091.EPS

◆ ***NOTE*** ◆

*To view the most up-to-the-minute error log, it is necessary to click on the "UPDATE" button and close the window once, and then open it again.*

### ● 1 "SELECT" button

A error log file to be viewed is selected.

### ● 2 "FATAL button

Of the error log files, only FATAL errors are displayed.

### ● 3 "WARNING" button

Of the error log files, only WARNING errors are displayed.

- **4 “BOTH” button**

Both “FATAL and “WARNING” errors windows are displayed.

- **5 “UPDATE”**

The latest error log data is copied from the CPU12A board of the RU to the FTP server of the CL.

- **6 Error message list box**

The contents of the error log file selected are displayed.

- **7 “Error Code” text box**

The error code of the error message selected (highlighted) in the error message list box is displayed.

- **8 “Error Name” text box**

The error name of the error message selected (highlighted) in the error message list box is displayed.

- **9 “Meaning” text box**

The occurrence condition of the error message selected (highlighted) in the error message list box is displayed.

- **10 “Details Info.” Button**

The detail information on the error message selected (highlighted) in the error message list box is displayed.

- **11 “Analysis Flow” button**

The analysis flow for the error message selected (highlighted) in the error message list box is displayed.

- **12 “Memo.” text box**

A memo may be attached to the error message (highlighted) in the error message list box.

Up to seven memos may be entered.

- **13 “Author” text box**

The name of the person (author) who entered text in the “Memo.” text box is entered.

- **14 “SAVE” button**

The contents of “Memo.” and “Author” are saved. To delete them, erase them by use of the Delete key and press the “SAVE” button again.

# 2.10 I/O TRACE EXPERT

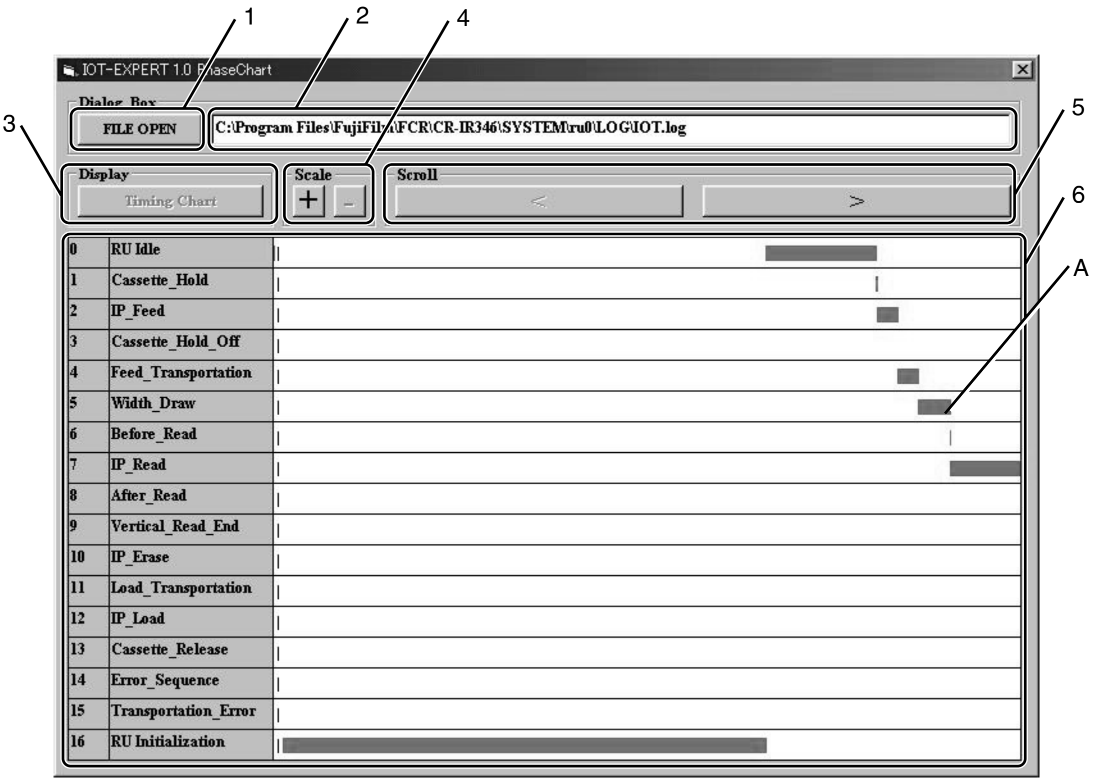
This function displays the I/O trace data in the form of phase chart or timing chart.

Note, however, that only I/O trace data may be displayed but communication-related trace data cannot be displayed.

**CAUTION**

*It is a new feature added to software version A05 or later.*

## 2.10.1 PhaseChart Window


1
2
4
3
5
6
A
IOT-EXPERT 1.0 PhaseChart
Dialog Box
FILE OPEN
C:\Program Files\FujiFilm\FCR\CR-IR346\SYSTEM\ru0\LOG\IOT.log
Display
Timing Chart
Scale
+
-
Scroll
<
>
0 RU Idle
1 Cassette_Hold
2 IP_Feed
3 Cassette_Hold_Off
4 Feed_Transportation
5 Width_Draw
6 Before_Read
7 IP_Read
8 After_Read
9 Vertical_Read_End
10 IP_Erase
11 Load_Transportation
12 IP_Load
13 Cassette_Release
14 Error_Sequence
15 Transportation_Error
16 RU Initialization

FR6H3092.EPS

### ● 1 “FILE OPEN” button

The file displayed in “2. File name text box” is opened.

### ● 2 File name text box

The complete path of the file to be opened is entered.

### ● 3 “Timing Chart” button

**◆ *NOTE* ◆**

*Never use this button because it is reserved for future use.*

### ● 4 “Scale” button

The display scale for the time base (horizontal axis) is changed.

### ● 5 “Scroll” button

The display range for the time base is shifted horizontally.

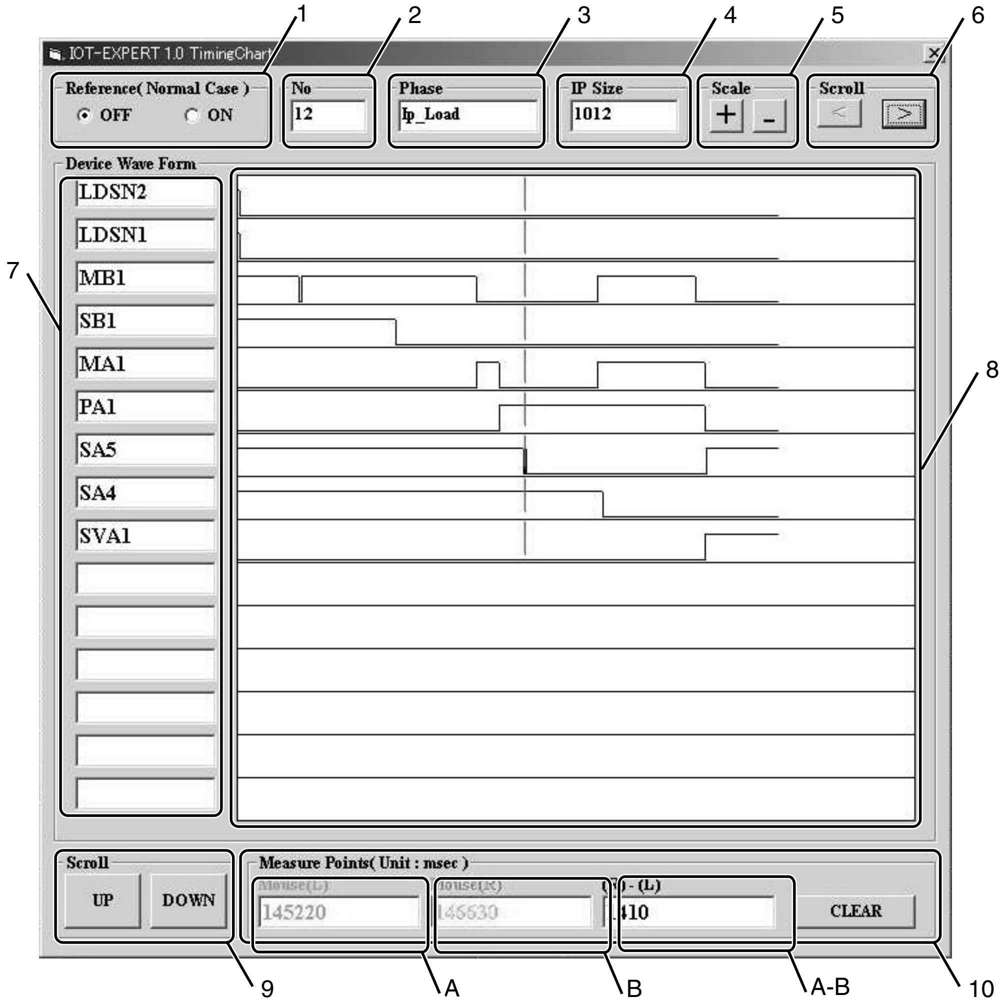
### ● 6 Chart display area

The phase chart is displayed with three colored bands. Meanings of the three colors are as follows.

| | |
|---|---|
| • Green: | Normal phase |
| • Red: | Phase where an error occurred |
| • Light green: | Location (phase) where the timing chart is displayed. |

By clicking on the band (A) in the phase chart, the timing chart for that phase is displayed.

## 2.10.2 TimingChart Window


1
2
3
4
5
6
7
8
9
A
B
A-B
10
IOT-EXPERT 1.0 TimingChart
Scale
+
-
Scroll
<
>
Device Wave Form
LDSN2
LDSN1
MB1
SB1
MA1
PA1
SA5
SA4
SVA1
Scroll
UP
DOWN
CLEAR

Reference( Normal Case ) ● OFF ○ ON

No: 12

Phase: Ip_Load

IP Size: 1012

Measure Points( Unit : msec )

Mouse(L): 145220

Mouse(R): 146630

(R) - (L): 410

FR6H3093.EPS

### ● 1 “Reference (Normal Case)” button◆

- OFF: The contents of the I/O trace log are displayed.
- ON: In addition to the contents of the I/O trace log, the timing charts for normal operation are displayed in blue color.

### ● 2 “No” text box

The phase number for the phase whose timing chart is displayed is indicated.

### ● 3 “Phase” text box

The phase name for the phase whose timing chart is displayed is indicated.

### ● 4 “IP Size” text box

The IP size detected when I/O trace was conducted is indicated.

### ● 5 “Scale” button

The display scale for the time base (horizontal axis) is changed.

### ● 6 “Scroll” button

The display range for the time base is shifted horizontally.

### ● 7 I/O name display text box

The I/O name is displayed.

### ● 8 Chart display area

The timing chart is displayed.

### ● 9 “Scroll” button

When the number of I/Os exceeds 15, the display area is shifted vertically.

### ● 10 “Measure Point (Unit: msec)” area

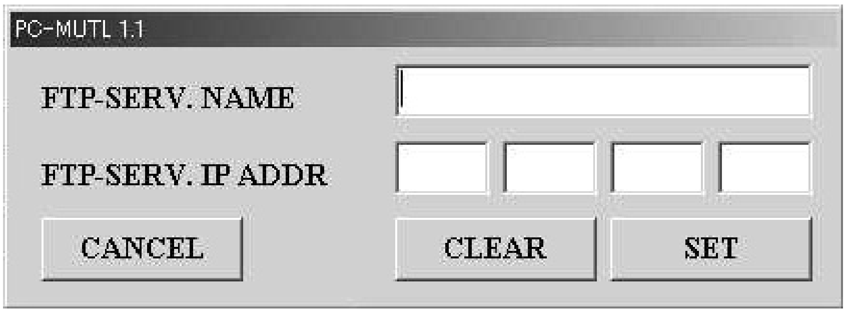
By putting the mouse pointer in the chart area and pressing the left or right button of the mouse, the following values are displayed in the A, B, and A-B fields.

- A: Elapsed time, from powering ON to the position pointed by the left-mouse pointer.
- B: Elapsed time, from powering ON to the position pointed by the right-mouse pointer.
- A-B: Difference in time between positions A and B

Note that when the “CLEAR” button is clicked, the values in the A, B, and A-B fields are all cleared.

## 2.11 FTP Server Designation Window

The FTP server for multiple units of RU may be managed in a centralized manner.


PC-MUTL 1.1
FTP-SERV. NAME
FTP-SERV. IP ADDR
CANCEL
CLEAR
SET

FR6H2558.eps

## 2.12 Installing I/O Trace Log and Error DB Software

To view the I/O trace log, error DB analysis flow, or detail information, it is necessary not only to install the software to the serviceman's PC but also to install the log data and service manual PDF data as well.

Install procedures are described here.

**CAUTIONS**

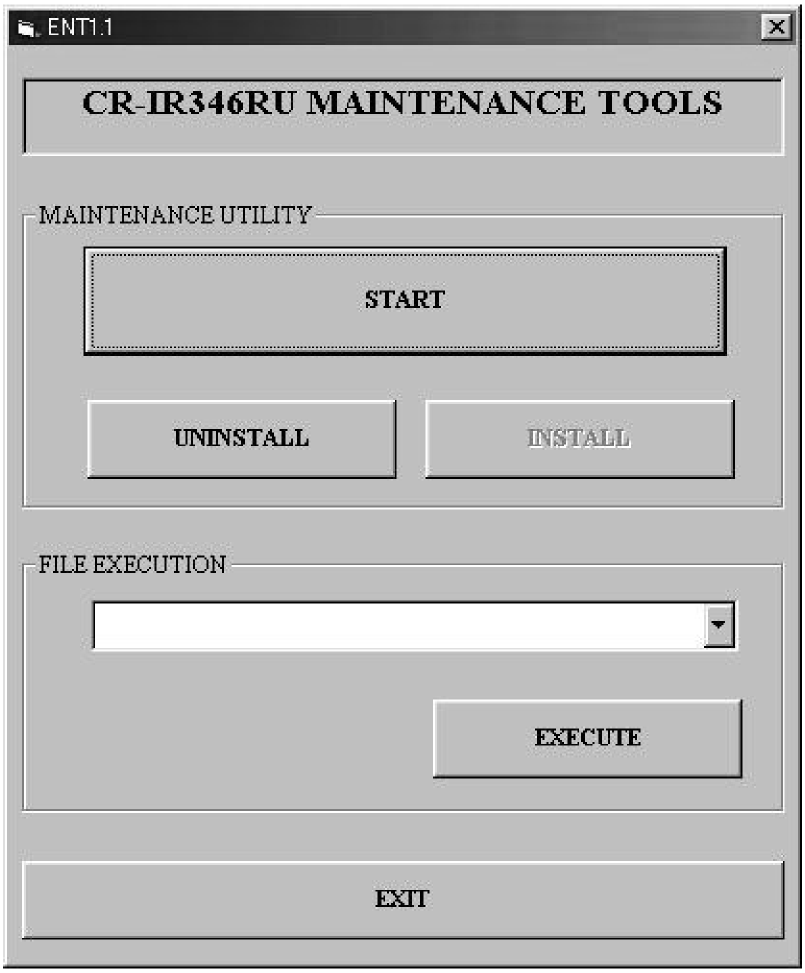
- *The serviceman's PC should run on Windows 2000 or NT.*
- *It is a new feature added to software version A05 or later.*

### ■ Procedure

(1) Put the CD bundled with the RU into the serviceman's PC.

The install start window opens.

(2) Click "EXIT".

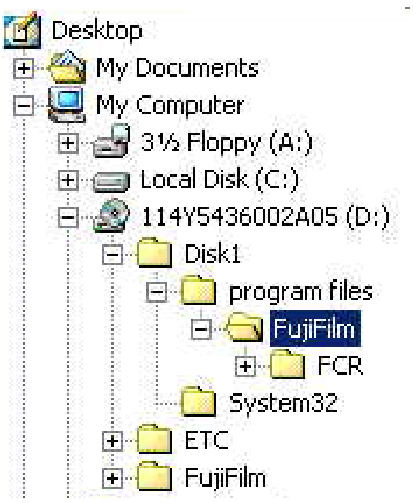

ENT1.1
CR-IR346RU MAINTENANCE TOOLS
MAINTENANCE UTILITY
START
UNINSTALL
INSTALL
FILE EXECUTION
EXECUTE
EXIT

[Click]

FR6H2553.EPS

(3) Start the Explorer and copy the folder named “FCR” from the CD-R onto the desktop.

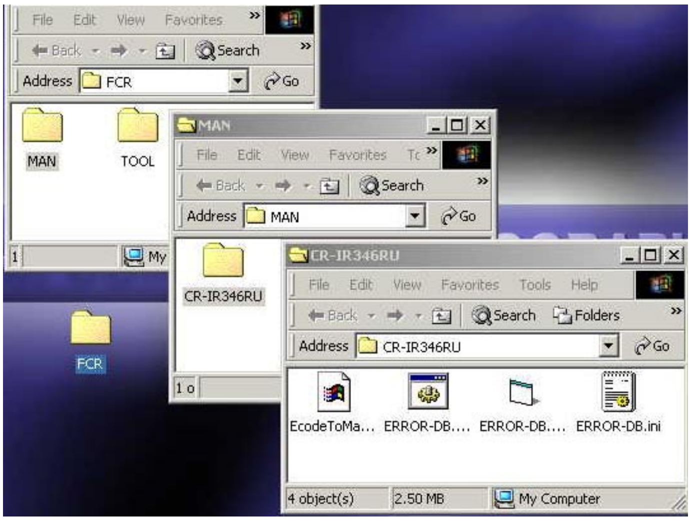
(114Y5436002A05): \Disk1\Program files\FujiFilm\FCR
[Start] → [Explorer] →
[114Y5436002A05] → [Disk1] → [Program files] → [FujiFilm] → [FCR]


Desktop
My Documents
My Computer
3½ Floppy (A:)
Local Disk (C:)
114Y5436002A05 (D:)
Disk1
program files
FujiFilm
FCR
System32
ETC
FujiFilm

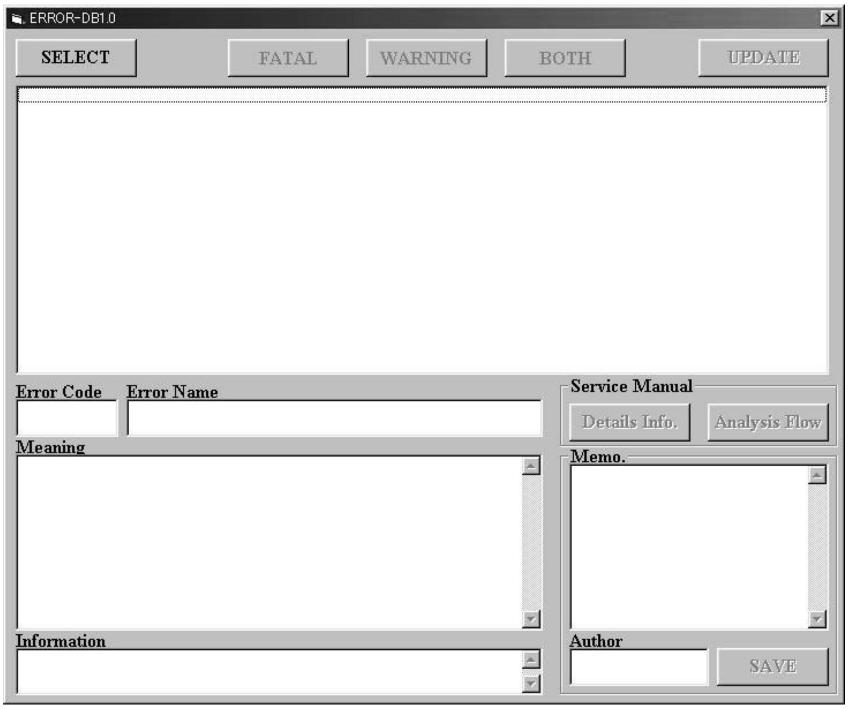
FR6H2554.EPS

(4) Open the folder copied and click “ERROR-DB.exe” to check whether the ERROR-DB windows opens or not.

[FCR] → [ERROR-DB.exe]


File Edit View Favorites
Back Search
Address FCR Go
MAN
TOOL
FCR
MAN
Address MAN
CR-IR346RU
CR-IR346RU
File Edit View Favorites Tools Help
Back Search Folders
Address CR-IR346RU Go
EcodeToMa...
ERROR-DB....
ERROR-DB....
ERROR-DB.ini
4 object(s)
2.50 MB
My Computer

FR6H2555.EPS

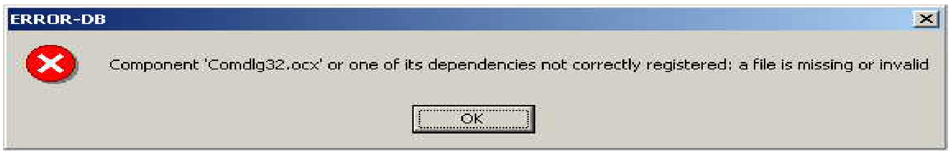

ERROR-DB1.0
SELECT
FATAL
WARNING
BOTH
UPDATE
Error Code
Error Name
Service Manual
Details Info.
Analysis Flow
Meaning
Memo.
Information
Author
SAVE

FR6H2556.EPS

### ◆ INSTRUCTION ◆

*If the ERROR-DB windows does not open but an error is indicated, perform the procedures set forth below.*

## ■ Error Indication



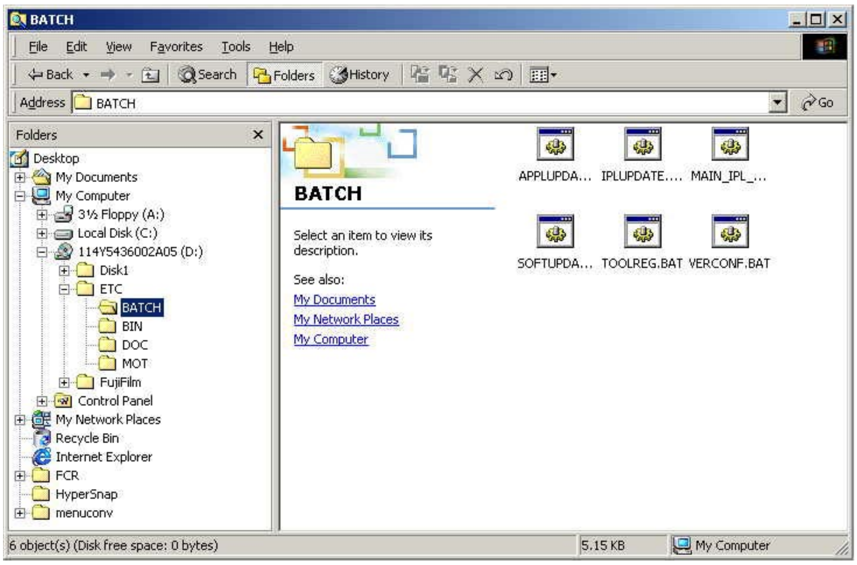
Component 'Comdlg32.ocx' or one of its dependencies not correctly registered: a file is missing or invalid

FR6H2557.EPS

Start the Explorer, double-click the batch file (Toolreg.batl), and restart the PC.

(114Y5436002A05) :\ETC\BATCH\TOOLREG.BAT

[Start] → [Explorer] → [114Y5436002A05] → [ETC] → [BATCH] → [TOOLREG.BAT]



BATCH
File Edit View Favorites Tools Help
Back Search Folders History
Address BATCH Go
Folders
Desktop
My Documents
My Computer
3½ Floppy (A:)
Local Disk (C:)
114Y5436002A05 (D:)
Disk1
ETC
BATCH
BIN
DOC
MOT
FujiFilm
Control Panel
My Network Places
Recycle Bin
Internet Explorer
FCR
HyperSnap
menuconv
BATCH
Select an item to view its description.
See also:
My Documents
My Network Places
My Computer
APPLUPDA...
IPLUPDATE....
MAIN_IPL_...
SOFTUPDA...
TOOLREG.BAT
VERCONF.BAT
6 object(s) (Disk free space: 0 bytes)
5.15 KB
My Computer

FR6H2558.EPS

## 2.13 Clear Backup Data

**CAUTION**

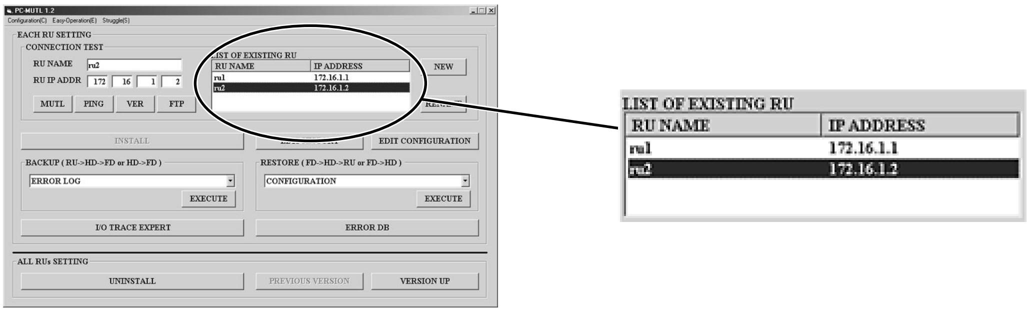
*If the software is to be updated from any version earlier than A04 to version A05 or later, be sure to clear the backup memory data. If it is not cleared, a software error will occur, so that the RU will hang up.*

### ■ Procedures for Clear Backup Data

(1) Exit the CL software.

(2) Start the PC-MUTL.

(3) From “LIST OF EXISTING RU”, select a RU where the backup memory is to be cleared.



PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
INSTALL
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru2
RU IP ADDR: 172 16 1 2

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG
RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

LIST OF EXISTING RU

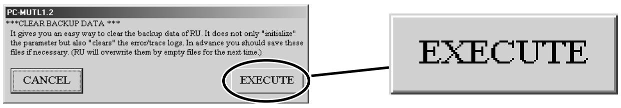
| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

FR6H3132.EPS

(4) [Easy-Operation] → [Clear Backup Data]

A dialog box appears to ask whether to execute clear.

(5) Click on the [EXECUTE] button.



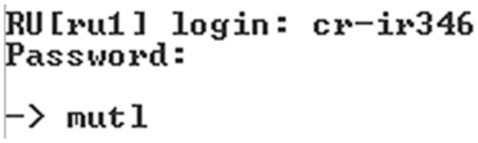
PC-MUTL1.2
CANCEL
EXECUTE
EXECUTE

***CLEAR BACKUP DATA ***

It gives you an easy way to clear the backup data of RU. It does not only "initialize" the parameter but also "clears" the error/trace logs. In advance you should save these files if necessary. (RU will overwrite them by empty files for the next time.)

FR6H3134.EPS

A DOS prompt appears.



```
RU[ru1] login: cr-ir346
Password:

-> mutl
```

FR6H3136.EPS

(6) Start the M-Utility.

(7) [1][ENT] → [1][ENT] → [1][ENT] → [3][ENT]

Make sure that the error log has been cleared.

## 2.14 Rescue APPL via Network (Soft Update)

This function updates the RU application via the network.

This function should be used when the RU does not boot up due to a corrupted RU application on the flash ROM.

**CAUTIONS**

- *Do not power OFF the RU and CL during RU application update. If power is turned OFF during update, the machine will no longer boot up.*
- *When the M-Utility can be started (can be logged in), the procedures described in this section should not be performed.*
  *If the procedures are inadvertently performed under condition where the M-Utility can be started, the CPU12A board should be replaced with a new one.*
- *Make sure that there is no machine that has been set up as described below, connected over the same network.*

  *"Machine that uses ru0 as the RU host name"*
  *"Machine that uses the IP address by its default (172.16.1.10)"*

  *If such a machine is connected over the same network, disconnect it from the network by powering it OFF or unplugging its I/F cable.*
  *Unless such a machine is disconnected, the application and configuration data of that machine will be automatically updated as well when the application of the RU is updated.*

**◇ REFERENCE ◇**

*By performing "soft update", the application software and the configuration data of default values are written into the flash ROM.*

(1) Make sure that there is no machine that has been set up as described below, connected over the same network.

- Machine that uses ru0 as the RU host name.
- Machine that uses the IP address by its default.

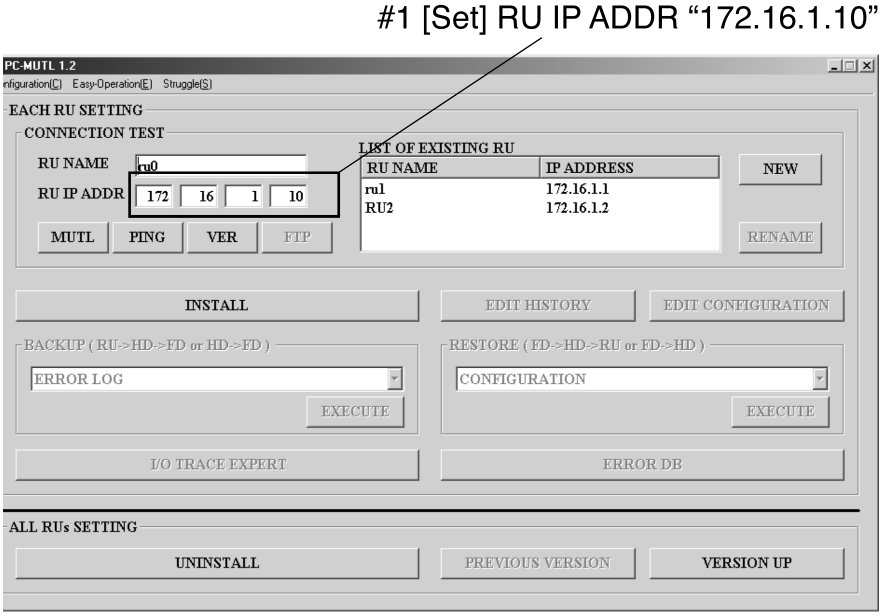
➩ If such a machine is connected, isolate it from the network by powering it OFF or disconnecting its I/F cable.

(2) Set the IP address of the CL to “172.16.1.20” (default value).

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from User Setting to Default Setting)” in Troubleshooting Volume

(3) Exit the CL software.

(4) Set the IP address of the RU to its default.



#1 [Set] RU IP ADDR “172.16.1.10”

PC-MUTL 1.2

RU NAME: ru0

RU IP ADDR: 172 16 1 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

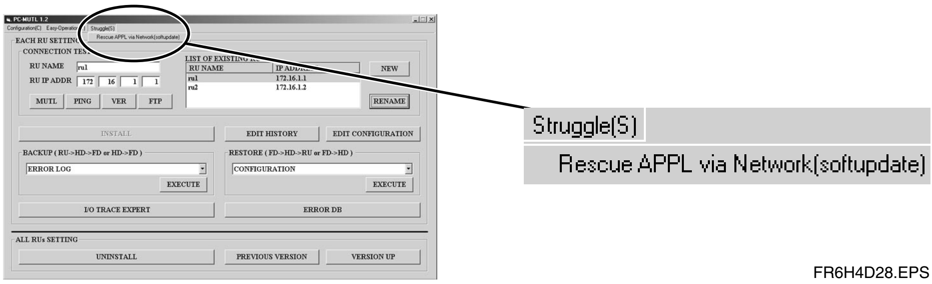
BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG

RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

nfiguration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

FR6H4D75.EPS

(5) [Struggle] → [Rescue APPL via Network (Soft Update)]


PC-MUTL 1.2
Configuration(C)
Easy-Operation
Struggle(S)
Rescue APPL via Network(softupdate)
EACH RU SETTING
CONNECTION TEST
MUTL
PING
VER
FTP
LIST OF EXISTING RU
NEW
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
EXECUTE
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP
Struggle(S)
Rescue APPL via Network(softupdate)

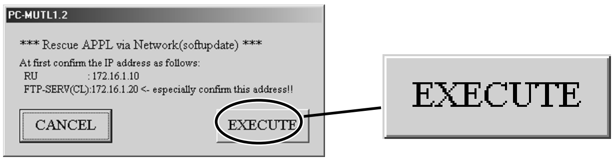
RU NAME ru1
RU IP ADDR 172 16 1 1

| RU NAME | IP ADD |
|---|---|
| ru1 | 172.16.1.1 |
| ru2 | 172.16.1.2 |

ERROR LOG
CONFIGURATION

FR6H4D28.EPS

(6) After verifying that the RU where soft update is to be performed has been booted, click on the [EXECUTE] button.

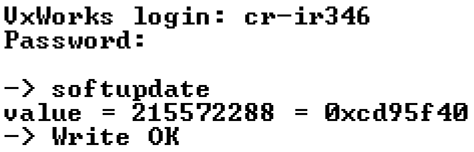

PC-MUTL1.2
CANCEL
EXECUTE
EXECUTE

*** Rescue APPL via Network(softupdate) ***
At first confirm the IP address as follows:
RU : 172.16.1.10
FTP-SERV(CL):172.16.1.20 <- especially confirm this address!!

FR6H4D74.EPS

The update of the RU application starts.

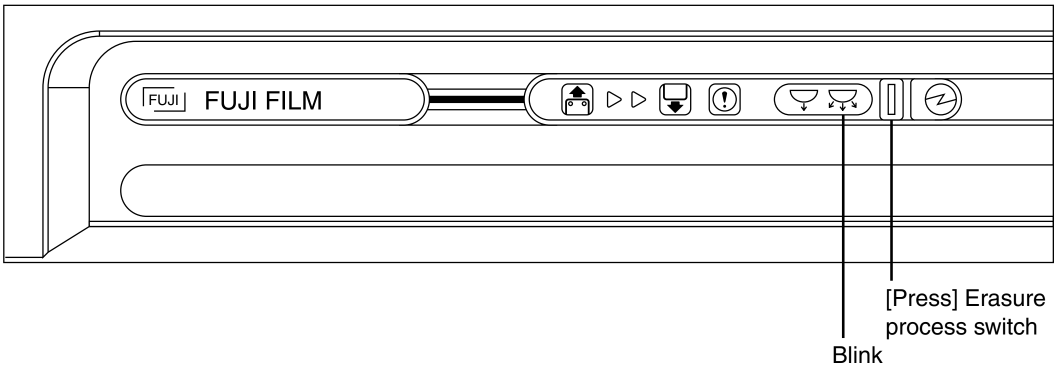
(7) Make sure that "Write OK" appears.



```
VxWorks login: cr-ir346
Password:

-> softupdate
value = 215572288 = 0xcd95f40
-> Write OK
```

FR6H3339.EPS

(8) Turn OFF and then back ON the power switch of the RU, and, at the same time, hold down the erasure process switch until the erasure process indicator blinks.

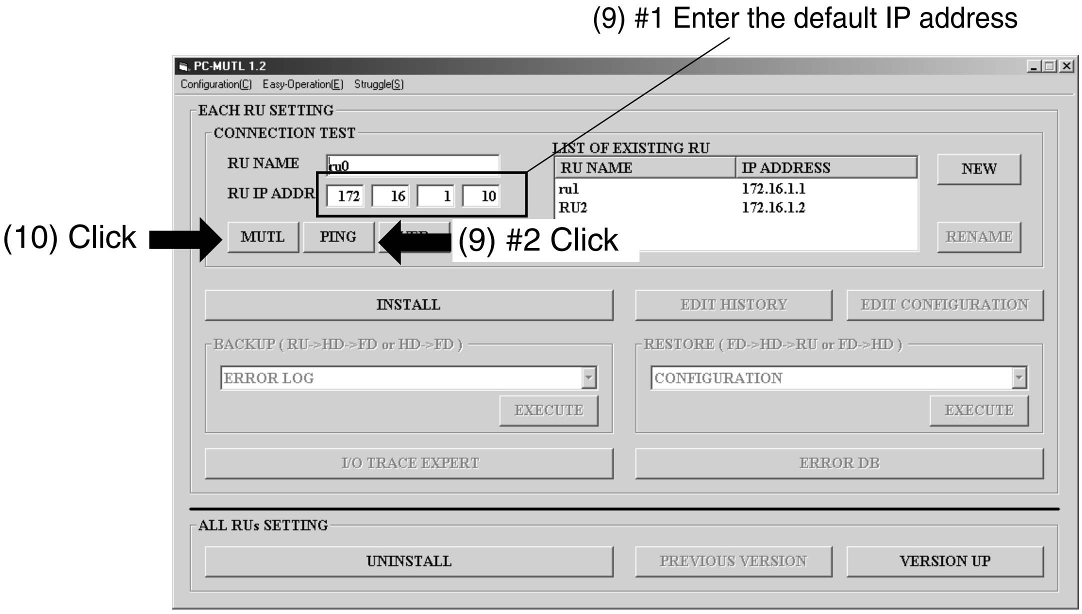

FUJI
FUJI FILM
[Press] Erasure process switch
Blink

FR6H4D77.EPS

(9) Set the IP address of the RU to its default, and click on the [PING] button.

Referring to the DOS prompt window displayed, make sure that the result is 100% successful.

(10) Click on the [MUTL] button.


(9) #1 Enter the default IP address
(10) Click
(9) #2 Click
PC-MUTL 1.2
Configuration(C) Easy-Operation(E) Struggle(S)
EACH RU SETTING
CONNECTION TEST
LIST OF EXISTING RU
NEW
MUTL
PING
RENAME
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP ( RU->HD->FD or HD->FD )
RESTORE ( FD->HD->RU or FD->HD )
EXECUTE
EXECUTE
I/O TRACE EXPERT
ERROR DB
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

RU NAME: ru0

RU IP ADDR: 172 16 1 10

| RU NAME | IP ADDRESS |
|---|---|
| ru1 | 172.16.1.1 |
| RU2 | 172.16.1.2 |

BACKUP ( RU->HD->FD or HD->FD ): ERROR LOG

RESTORE ( FD->HD->RU or FD->HD ): CONFIGURATION

FR6H4D76.EPS

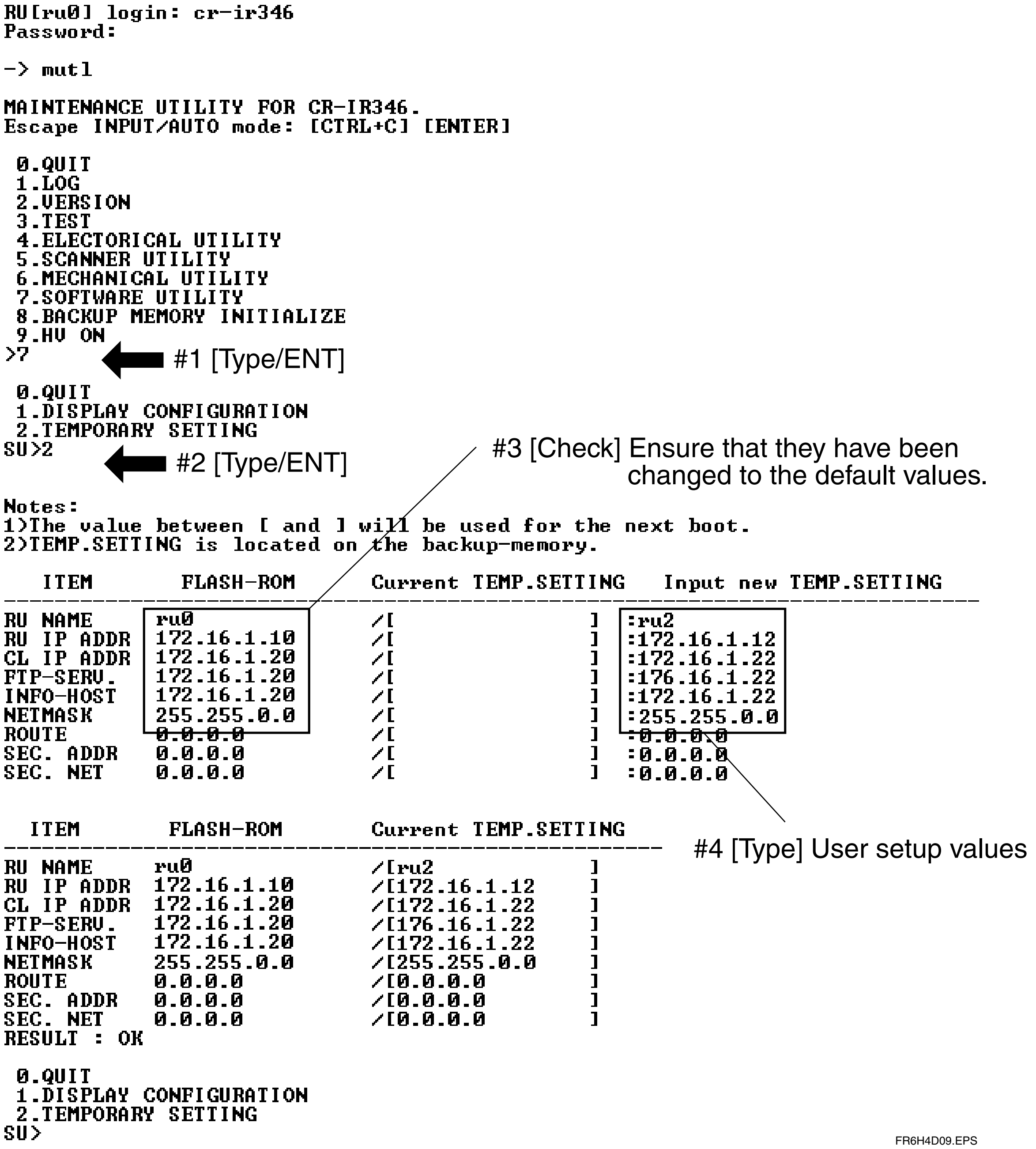
◆ ***NOTE*** ◆

*In an N-to-N connection setup, if the RU software is to be updated, be sure to execute “PING”, before version update, to ensure that the RU has been connected. If the RU has not been connected, the RU software cannot be updated.*

(11) Using TEMPORARY SETTING of SOFTWARE UTILITY, change the following items to the user settings that have been noted before the procedure.

(Example) When the user settings are as shown below:

RUNAME : ru2
RU IP ADDR :172.16.1.12
CL IP ADDR :172.16.1.22
FTP-SERV. :172.16.1.22
INFO-HOST :172.16.1.22



```
RU[ru0] login: cr-ir346
Password:

-> mutl

MAINTENANCE UTILITY FOR CR-IR346.
Escape INPUT/AUTO mode: [CTRL+C] [ENTER]

 0.QUIT
 1.LOG
 2.UERSION
 3.TEST
 4.ELECTORICAL UTILITY
 5.SCANNER UTILITY
 6.MECHANICAL UTILITY
 7.SOFTWARE UTILITY
 8.BACKUP MEMORY INITIALIZE
 9.HU ON
>7

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>2


Notes:
1)The value between [ and ] will be used for the next boot.
2)TEMP.SETTING is located on the backup-memory.

   ITEM        FLASH-ROM      Current TEMP.SETTING   Input new TEMP.SETTING
-----------------------------------------------------------------------------
RU NAME     ru0               /[                ]  :ru2
RU IP ADDR  172.16.1.10       /[                ]  :172.16.1.12
CL IP ADDR  172.16.1.20       /[                ]  :172.16.1.22
FTP-SERU.   172.16.1.20       /[                ]  :176.16.1.22
INFO-HOST   172.16.1.20       /[                ]  :172.16.1.22
NETMASK     255.255.0.0       /[                ]  :255.255.0.0
ROUTE       0.0.0.0           /[                ]  :0.0.0.0
SEC. ADDR   0.0.0.0           /[                ]  :0.0.0.0
SEC. NET    0.0.0.0           /[                ]  :0.0.0.0

  ITEM        FLASH-ROM       Current TEMP.SETTING
---------------------------------------------------
RU NAME     ru0               /[ru2             ]
RU IP ADDR  172.16.1.10       /[172.16.1.12     ]
CL IP ADDR  172.16.1.20       /[172.16.1.22     ]
FTP-SERU.   172.16.1.20       /[176.16.1.22     ]
INFO-HOST   172.16.1.20       /[172.16.1.22     ]
NETMASK     255.255.0.0       /[255.255.0.0     ]
ROUTE       0.0.0.0           /[0.0.0.0         ]
SEC. ADDR   0.0.0.0           /[0.0.0.0         ]
SEC. NET    0.0.0.0           /[0.0.0.0         ]
RESULT : OK

 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>
```

#1 [Type/ENT]

#2 [Type/ENT]

#3 [Check] Ensure that they have been changed to the default values.

#4 [Type] User setup values

FR6H4D09.EPS

(12) Turn OFF the power switch of the RU and then back ON.

**◆ *NOTE* ◆**

*Unless the power switch of the RU is turned OFF and then back ON, the user settings will not become effective.*

(13) Set the IP address of the CL to the user setup value.

☞ “7.3 Procedures for Changing the IP Address of the CL, ■ Changing the CL (IP Address/NET MASK) (from Default Setting to User Setting)” in Troubleshooting Volume

(14) Click on Start and then sequentially choose “Programs”, “Fuji Film”, and “FCR”.

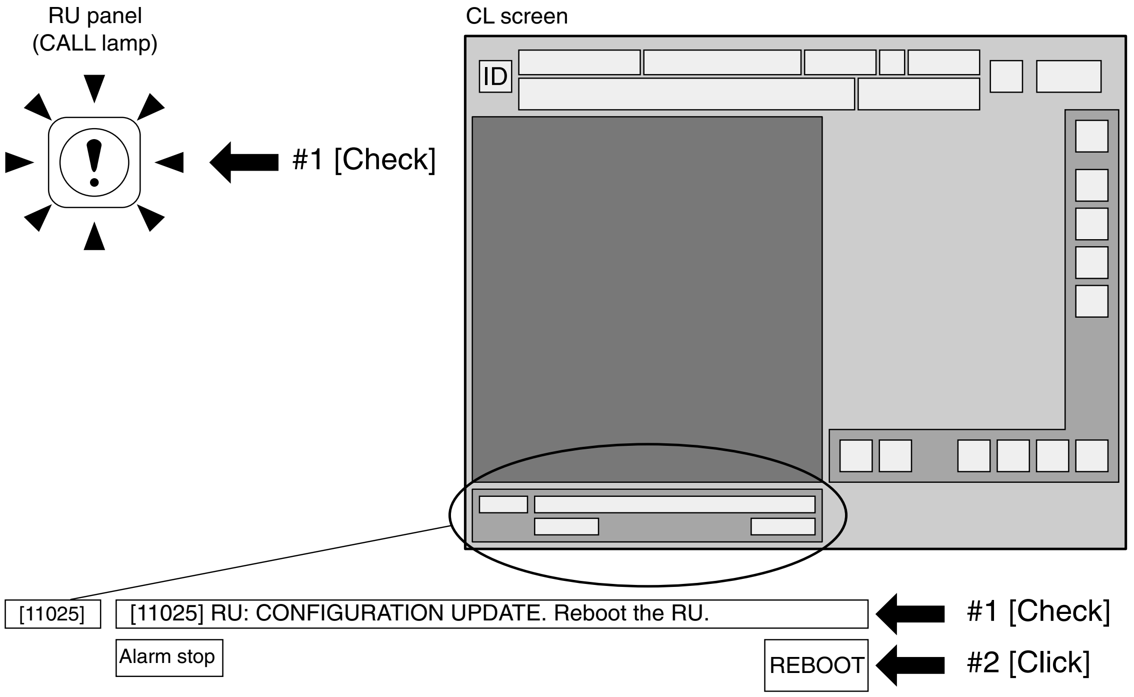
➩ The CL-AP starts up in about one minutes.

A RU boot-up message appears on the monitor of the CL, and after about one minute has passed, the RU becomes ready for operation.

Boot up the CL.

(15) Verify that the RU call lamp is illuminated, with [11025] displayed on the CL screen, and reboot the RU from the CL screen, and the RU boots up.

When it is rebooted, all the panel indicators are illuminated, with an audible alarm generated.



[11025] RU: CONFIGURATION UPDATE. Reboot the RU.

FR6H4D29.EPS

# 3. Details of M-Utility

## [1] LOG

Displays the error log or trace log or saves the error log or trace log stored in the RU's CPU memory into the CL's FTP server. Note that the trace log is for design analysis use.

### [1-1] ERROR LOG

Displays the contents of the error log or saves the error log stored in the RU's CPU memory into the CL's FTP server.

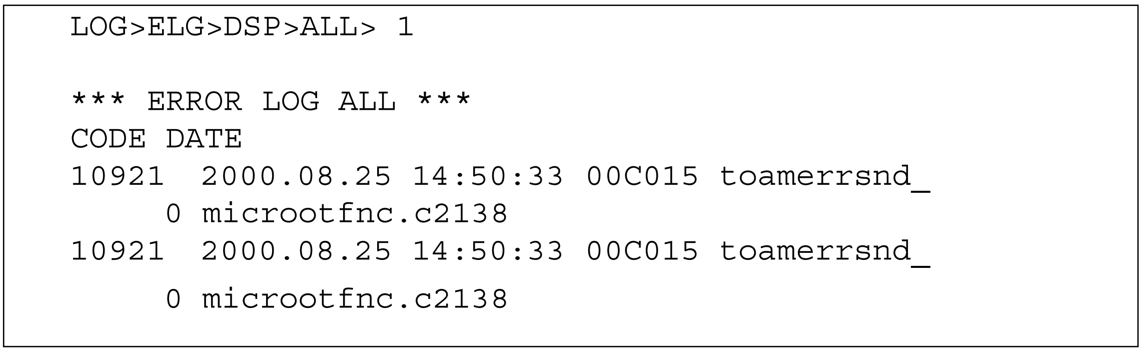
## [1-1-1] DISPLAY

Displays the contents of the error log on screen.

**◇ *REFERENCE* ◇**

*When the RU's CPU memory becomes full, the oldest error log information is deleted to store the newest error log information. To back up the contents of the error log, execute "[1-1-2] SAVE TO FTP-SERV" and then copy the FTP server data onto a floppy disk or other media.*

### ■ ALL: Displays all the logged error events in chronological order.

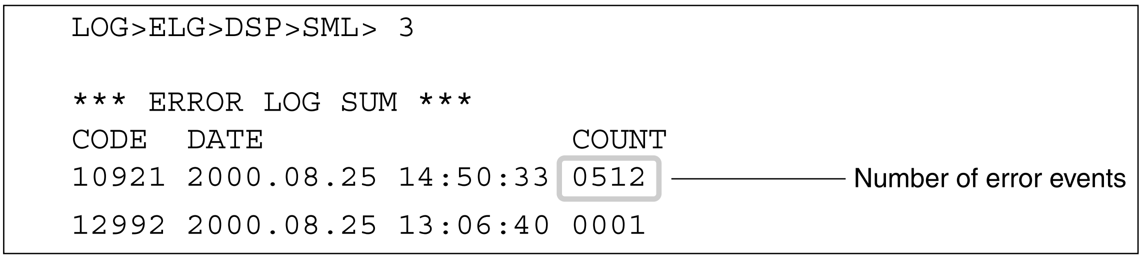


```
LOG>ELG>DSP>ALL> 1

*** ERROR LOG ALL ***
CODE DATE
10921  2000.08.25 14:50:33 00C015 toamerrsnd_
     0 microotfnc.c2138
10921  2000.08.25 14:50:33 00C015 toamerrsnd_

     0 microotfnc.c2138
```

FR6H3052.EPS

| | |
|---|---|
| [1] FATAL: | Displays logged error events at levels 0, 1, and 9 only. |
| [2] WARNING: | Displayed logged error events at levels 2 and 3 only. |
| [3] BOTH: | Displays all error events. |

## ■ SUMMARY: Displays the number of error events of each error code.



```
LOG>ELG>DSP>SML> 3

*** ERROR LOG SUM ***
CODE  DATE                COUNT
10921 2000.08.25 14:50:33 0512
12992 2000.08.25 13:06:40 0001
```

FR6H3053.EPS

| | |
|---|---|
| [1] FATAL: | Displays the number of logged error events at levels 0 and 9 after grouping them according to error codes. |
| [2] WARNING: | Displays the number of logged error events at levels 1, 2, 3 and 4 after grouping them according to error codes. |
| [3] BOTH: | Displays the total number of logged error events after grouping them according to error codes. |

## ■ Procedure: Example where FATAL error is to be displayed

(1) [1] [ENT] → [1] [ENT] → [1] [ENT] → [1] [ENT] → [1] [ENT]

The error log appears on the display. A prompt appears, asking whether you want to display the next data.

(2) To display the next data, choose “1”.

The next data appears on the display.

(3) Choose “0”.

The error log display process terminates.

## ■ Display: For Version A02

```
|LOG>ELG>DIS>ALL>1 ..................................... (1) |
|*** ERROR LOG ALL ***                                       |
|CODE DATE                                                   |
|13603 2000.08.25 14:51:45 00DC05 toammoni_                  |
|      3D0004 commonitar_Op.c 258                            |
|10921 2000.08.25 14:50:33 00C014 toamerrsnd_                |
|      0 microtfnc,c 2138                                    |
|      •                                                     |
|      •                                                     |
|      •                                                     |
|10921 2000.08.25 14:45:25 00C013 toamerrsnd_                |
|0.END 1.NEXT(DEFAULT=1) : 1 ............................ (2) |
|CODE DATE                                                   |
|13603 2000.08.25 14:20:15 00DC05 toammoni_                  |
|      3D0004 commonitar_Op.c 258                            |
|10921 2000.08.25 14:05:01 00C014 toamerrsnd_                |
|      0 microtfnc,c 2138                                    |
|      •                                                     |
|      •                                                     |
|      •                                                     |
|10921 2000.08.25 13:50:30 00C013 toamerrsnd_                |
|0.END 1.NEXT(DEFAULT=1) : 0 ............................ (3) |
```

## ■ Display: For Versions A03 and A04

```
|LOG>ELG>DIS>ALL>1 ..................................... (1) |
|*** ERROR LOG ALL ***                                        |
|CODE DATE                                                    |
|[13603] 2000/08/25 14:51:45 00DC05 toammoni_                 |
|         :3D0004 commonitar_Op.c 258                         |
|[10921] 2000/08/25 14:50:33 00C014 toamerrsnd_               |
|    :0 microtfnc,c 2138                                      |
|    •                                                        |
|    •                                                        |
|    •                                                        |
|[10921] 2000/08/25 14:45:25 00C013 toamerrsnd_               |
|0.END 1.NEXT(DEFAULT=1) : 1 ............................ (2) |
|CODE DATE                                                    |
|[13603] 2000/08/25 14:20:15 00DC05 toammoni_                 |
|         :3D0004 commonitar_Op.c 258                         |
|[10921] 2000/08/25 14:05:01 00C014 toamerrsnd_               |
|    :0 microtfnc,c 2138                                      |
|    •                                                        |
|    •                                                        |
|    •                                                        |
|[10921] 2000/08/25 13:50:30 00C013 toamerrsnd_               |
|0.END 1.NEXT(DEFAULT=1) : 0 ............................ (3) |
```

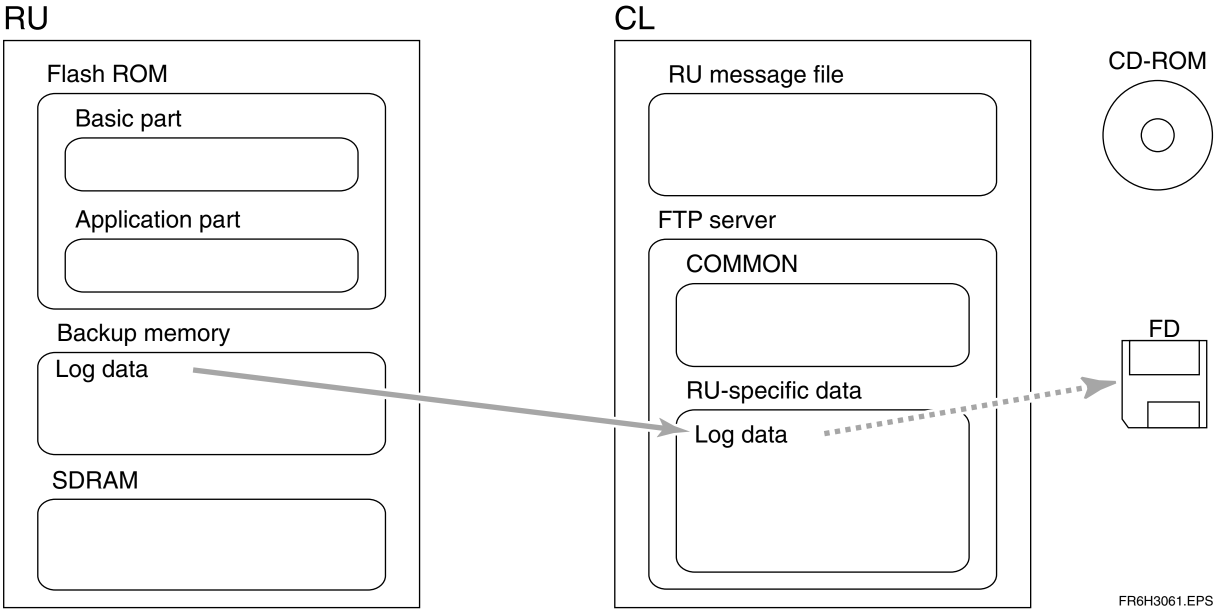
## ■ Display: For Version A05 or Later

```
LOG>ELG>DIS>ALL>1 .......................................  (1)
*** ERROR LOG ALL ***
CODE DATE
[13603] 2000/08/25 14:51:45 00DC05 <SR> T02
        :3D0004 commonitar_Op.c 258
[10921] 2000/08/25 14:50:33 00C014 <BR> T99
        :0 microtfnc,c 2138
    •
    •
    •
[10921] 2000/08/25 14:45:25 00C013 <BR> T99
0.END 1.NEXT(DEFAULT=1) : 1 ..............................  (2)
CODE DATE
[13603] 2000/08/25 14:20:15 00DC05 <SW> T02
        :3D0004 commonitar_Op.c 258
[10921] 2000/08/25 14:05:01 00C014 <BR> T99
        :0 microtfnc,c 2138
    •
    •
    •
[10921] 2000/08/25 13:50:30 00C013 <BR> T99
0.END 1.NEXT(DEFAULT=1) : 0 ..............................  (3)
```

## [1-1-2] SAVE TO FTP-SERV.

Saves the error log stored in the RU’s CPU memory into the CL’s FTP server.

### ■ Flow of data


RU
Flash ROM
Basic part
Application part
Backup memory
Log data
SDRAM
CL
RU message file
FTP server
COMMON
RU-specific data
Log data
CD-ROM
FD
FR6H3061.EPS

### ■ Procedure

(1) [1] [ENT] → [1] [ENT] → [2] [ENT]

A message appears, asking whether you really want to start execution.

(2) Choose “1” (YES).

The system then performs the data copy process. When the process ends normally, the display reads “RESULT: OK”.

### ■ Display

```
|LOG>ELG>2 .......................................... (1) |
|ARE YOU SURE?                                            |
|1.YES 2.NO(DEFAULT=2) : 1 .......................... (2) |
|RESULT : OK                                              |
```

## [1-1-3] CLEAR

Deletes the error log from the RU’s CPU memory.

### ■ Procedure

(1) [1] [ENT] → [1] [ENT] → [3] [ENT]

A message appears, asking whether you really want to start execution.

(2) Choose “1” (YES).

The system then deletes the error log. When the deletion process ends normally, the display reads “RESULT: OK”.

### ■ Display

```
|LOG>ELG>3 ............................................ (1) |
|ARE YOU SURE?                                              |
|1.YES 2.NO(DEFAULT=2) : 1 ............................ (2) |
|RESULT : OK                                                |
```

## [1-2] TRACE LOGS

### [1-2-1] DISPLAY

Displays the trace logs on screen.

**CAUTION**

*This feature is for design analysis only. Do not use this feature in the market (for regular servicing purposes).*

### [1-2-2] SAVE ALL TRACE LOGS TO FTP-SERV.

Saves the trace logs stored in the RU's CPU memory into the CL's FTP server.

#### ■ Procedure

(1) [1] [ENT] → [2] [ENT] → [2] [ENT]

A message appears, asking whether you really want to start execution.

(2) Choose "1" (YES).

The system then performs the trace log copy process. When the process ends normally, the display reads "RESULT: OK".

#### ■ Display

```
|LOG>TLG>2 ................................................ (1)  |
|ARE YOU SURE?                                                   |
|1.YES 2.NO(DEFAULT=2)  : 1 ................................ (2)  |
|RESULT : OK                                                     |
```

### [1-2-3] CLEAR ALL TRACE LOGS

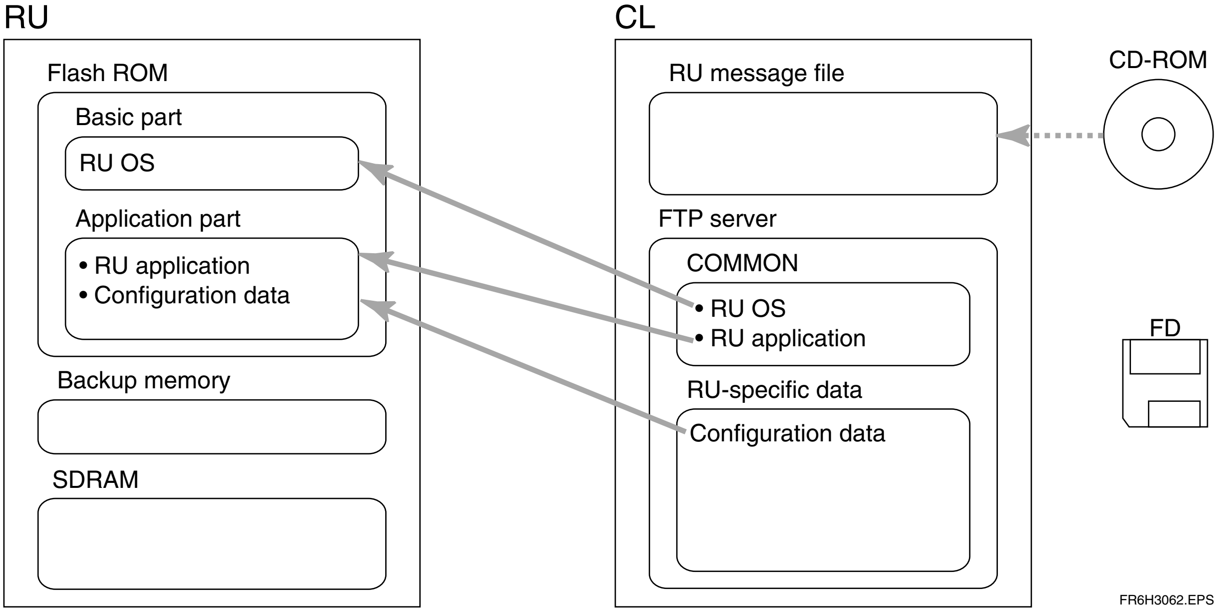
Deletes the trace logs from the RU's CPU memory.

## [2] VERSION

Displays the version information about the RU software on screen or loads the RU software or configuration information from the CL's FTP server into the RU.

### ■ Flow of data

The following data flow diagram shows how data is loaded from the CL's FTP server to the RU.


RU
Flash ROM
Basic part
RU OS
Application part
• RU application
• Configuration data
Backup memory
SDRAM
CL
RU message file
FTP server
COMMON
• RU OS
• RU application
RU-specific data
Configuration data
CD-ROM
FD

FR6H3062.EPS

## [2-1] DISPLAY VERSION

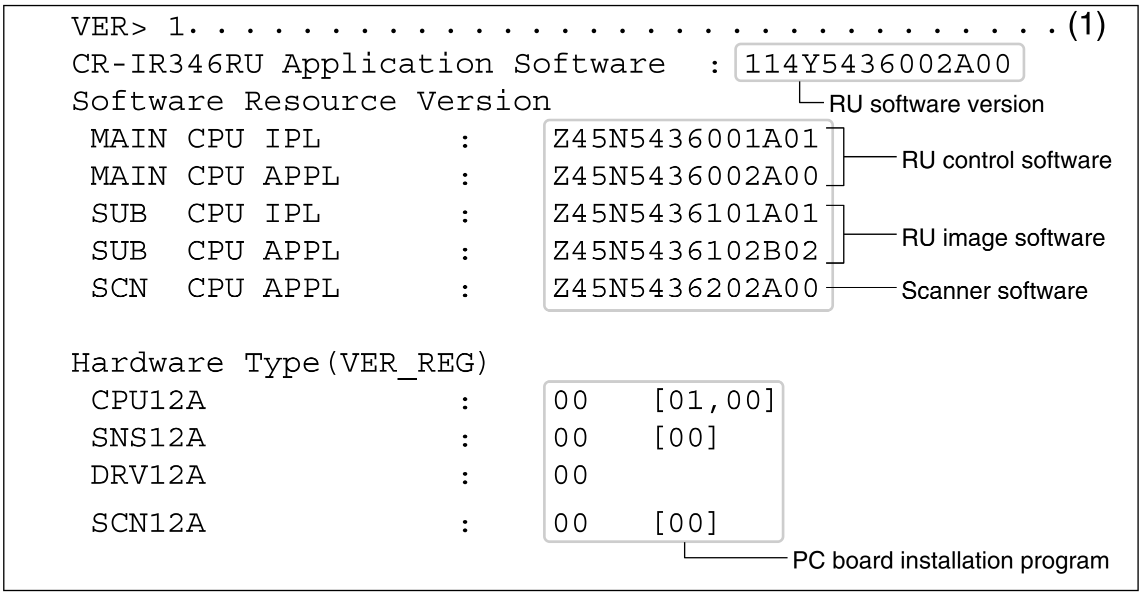
Displays the version information about the RU software.

### ■ Procedure

(1) [2] [ENT] → [1] [ENT]

The version information then appears on the display.

### ■ Display



```
VER> 1. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (1)
CR-IR346RU Application Software  : 114Y5436002A00
Software Resource Version
 MAIN CPU IPL          :    Z45N5436001A01
 MAIN CPU APPL         :    Z45N5436002A00
 SUB  CPU IPL          :    Z45N5436101A01
 SUB  CPU APPL         :    Z45N5436102B02
 SCN  CPU APPL         :    Z45N5436202A00

Hardware Type(VER_REG)
 CPU12A                :    00   [01,00]
 SNS12A                :    00   [00]
 DRV12A                :    00

 SCN12A                :    00   [00]
```

RU software version
RU control software
RU image software
Scanner software
PC board installation program

FR6H3054.EPS

## [2-2] DETAIL

Loads the RU software or configuration data from the CL's FTP server into the RU.

⚠ **CAUTION**

*This feature is for design analysis only. Do not use this feature in the market (for regular servicing purposes).*

### [2-2-1] LOAD SOFTWARE FROM FTP-SERV.

Loads the RU software from the CL's FTP server into the flash ROM on the RU's CPU12A board.

⚠ **CAUTION**

*While the main CPU or sub-CPU OS is being loaded, do not turn OFF the power or perform a reset because the flash ROM on the CPU12A board becomes damaged, resulting in the RU's inability to start up.*

The following software is to be loaded:

| Menu item | Software to be loaded |
|---|---|
| [1] MAIN CPU IPL | Main CPU OS |
| [2] MAIN CPU APPL | Main CPU application |
| [3] SUB CPU IPL | Sub-CPU OS |
| [4] SUB CPU APPL | Sub-CPU application |

## [2-2-2] LOAD CONFIGURATION FROM FTP-SERV

Loads the RU configuration data (IRSET, IRSTATUS, NETMASK, and ROUTE) from the CL's FTP server into the flash ROM on the RU's CPU12A board.

## [2-2-3] COMPARE SOFTWARE WITH FTP-SERV

Compares the version of the software that is loaded in the flash ROM of the RU with the version of the RU software on the FTP server of the CL.

The following software is to be compared:

| Menu item | Software to be compared |
|---|---|
| [1] MAIN CPU IPL | Main CPU IPL (OS) |
| [2] MAIN CPU APPL | Main CPU application |
| [3] SUB CPU FT | ***** |

## [3] TEST

Conducts an IP conveyance/image reading test in the utility mode, removes dust from the scanner unit, or checks the network connection.

### ■ Function

#### ● ROUTINE: Image reading and IP conveyance test

Performs a regular IP read/erasure process and outputs an image. Also allows you to perform a read/erasure/image output process while displaying the sensor status (open or closed) and other information on screen.

#### ● AUTO MODE: Conveyance test repetition

Performs a regular IP read/erasure process and outputs an image. When an IP returns to the cassette, it is fed into the machine again and subjected to a read/erasure process. Use this mode to check for improper IP conveyance.

#### ● SCANNER CLEANING: Light-collecting guide cleaning

Rotates the light-collecting mirror to clean the light-collecting surface of the light-collecting guide.

#### ● NETWORK: Checks for access to the FTP server.

Checks the network connection and access to the FTP server.

## [3-1] ROUTINE

Performs an IP conveyance/image read operation in the utility mode. Also allows you to perform a read/erasure/image output process while displaying the sensor status (open or closed) and other information on screen.

**◇ *REFERENCE* ◇**

*When "READING & ERASURE" and "MONITOR READING & ERASURE" are to be executed, it is necessary to make the RU ready for reading (with the cassette loading lamp illuminated).*

*Unless the RU is ready for reading, IP conveyance will not start even when a cassette is set in position.*

### [3-1-1] READING & ERASURE

Performs a regular image read operation, outputs an image, and deletes an image from the IP. Use this menu item when conducting IP conveyance and image read operations simultaneously for testing purposes.

### ■ Procedure

(1) Have a cassette on hand.

Have an exposed cassette on hand, depending on what to be checked.

(2) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(3) [3][ENT] → [1][ENT] → [1][ENT]

The machine is made ready for IP conveyance and reading.

(4) Set the cassette in position.

IP conveyance and reading are performed.

When the cassette is set again, IP conveyance and reading are performed successively.

(5) [Ctrl] + [C] → [ENT]

The menu then closes.

### ■ Display

```
|TST>RTN> 1 ....................................... (3)  |
|                                                        |
|COMMAND IS IN PROGRESS. ............................ (4)  |
|INTERRUPTION : HIT[^C] + ENT KEY. ................... (5)  |
```

## [3-1-2] PRIMARY ERASURE

Performs a regular image read operation to detect the dose received by the IP and effects IP erasure in accordance with the received dose. Since this menu item performs an image read operation to detect the amount of IP consumption, it does not output an image. Use this menu item when you check an image-reading conveyance operation only.

### ■ Procedure

(1) Have a cassette on hand.

Have on hand a cassette to be erased.

(2) [3][ENT] → [1][ENT] → [2][ENT]

The machine is ready for IP conveyance and erasure.

(3) Set the cassette in position.

IP conveyance and erasure are performed.

When the cassette is set again, IP conveyance and erasure are performed successively.

(4) [Ctrl] + [C] → [ENT]

The menu then closes.

### ■ Display

```
|TST>RTN> 1 ......................................... (2)  |
|                                                          |
|COMMAND IS IN PROGRESS. ............................ (3)  |
|INTERRUPTION : HIT[^C] + ENT KEY. .................. (4)  |
```

## [3-1-3] SECONDARY ERASURE

Conveys the IP through the image read section without performing an image read operation and merely subjects the IP to secondary erasure. Use this menu item when you check the IP conveyance mechanism only.

## [3-1-4] MONITOR READING & ERASURE

Performs the “READING & ERASURE” operation while displaying the sensor status (open or closed) and other information on screen. Use this menu item to locate a fault.

### ■ Procedure

(1) Have a cassette on hand.

Have on hand a cassette to be erased.

(2) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(3) [3][ENT] → [1][ENT] → [4][ENT]

The machine is made ready for IP conveyance and erasure.

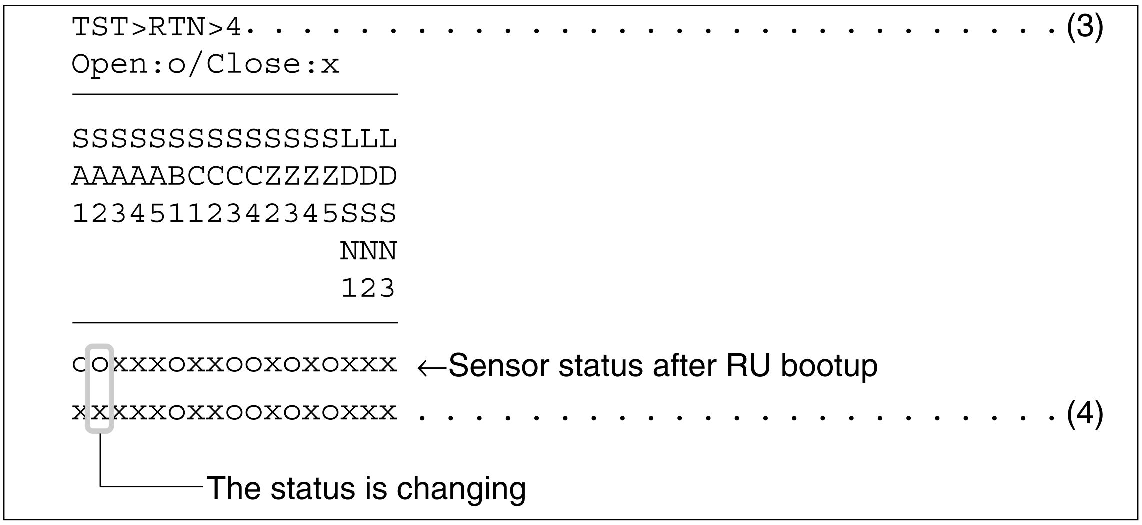
(4) Set the cassette in position.

IP conveyance and erasure are performed, and a new line is displayed whenever the sensor status changes.

(5) [Ctrl] + [C] → [ENT]

The menu then closes.

### ■ Display



```
TST>RTN>4. . . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
Open:o/Close:x
_________________

SSSSSSSSSSSSSSLLL
AAAAABCCCCZZZZDDD
12345112342345SSS
              NNN
              123
_________________

ooxxxoxxooxoxoxxx ←Sensor status after RU bootup
xxxxxoxxooxoxoxxx . . . . . . . . . . . . . . . . . . . . . . . .(4)
```

FR6H3083.EPS

## [3-2] AUTO MODE

Repeatedly performs an IP conveyance/image read operation in the utility mode. When an IP returns, the system concludes that the cassette is newly set in position, and automatically repeats an IP conveyance operation a preselected number of times.

## [3-2-1] READING & ERASURE

Performs a regular read operation, outputs an image, and deletes an image from the IP. Since the same IP is repeatedly conveyed, however, the machine reads an erased IP on the second and subsequent cycles.

**◇ *REFERENCE* ◇**

*When "READING & ERASURE" is to be executed, it is necessary to make the RU ready for reading (with the cassette loading lamp illuminated).*
*Unless the RU is ready for reading, IP conveyance will not start even when a cassette is set in position.*

### ■ Procedure

(1) Have a cassette on hand.

(2) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(3) [3][ENT] → [2][ENT] → [1][ENT]

The display then prompts you to enter the number of times you want to perform IP conveyance and reading.

(4) [5][ENT]

The machine is then ready for performing IP conveyance and reading five times.

(5) Set the cassette in position.

IP conveyance and reading are performed the number of times (five times) that has been set in step (4).

(6) [Ctrl] + [C] → [ENT]

The menu then closes.

### ■ Display

```
|TST>AUTO>1 ......................................... (3)  |
|                                                          |
|INPUT THE NUMBER OF CONVEYANCES.                          |
|INPUT(0 - 99999):5 ................................. (4)  |
|                                                          |
|COMMAND IS IN PROGRESS. ............................ (5)  |
|INTERRUPTION : HIT[^C] + ENT KEY. .................. (6)  |
```

## [3-2-2] PRIMARY ERASURE

Performs an image read operation to detect the dose received by the IP and effects IP erasure in accordance with the received dose. Since this menu item performs an image read operation to detect the amount of IP consumption, it does not output an image.

### ■ Procedure

(1) Have a cassette on hand.

(2) [3][ENT] → [2][ENT] → [2][ENT]

The display then prompts you to enter the number of times you want to perform IP conveyance and erasure.

(3) [5][ENT]

The machine is then ready for performing IP conveyance and erasure five times.

(4) Set the cassette in position.

IP conveyance and erasure are performed the number of times (five times) that has been set in step (3).

(5) [Ctrl] + [C] → [ENT]

The menu then closes.

### ■ Display

```
|TST>AUTO>2 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (2)  |
|                                                                                              |
|INPUT THE NUMBER OF CONVEYANCES.                                                              |
|INPUT(0 - 99999):5 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (3)  |
|                                                                                              |
|COMMAND IS IN PROGRESS. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (4)  |
|INTERRUPTION : HIT[^C] + ENT KEY. . . . . . . . . . . . . . . . . . . . . . . . . . . (5)  |
```

## [3-2-3] SECONDARY ERASURE

Conveys the IP without performing an image read operation and merely subjects the IP to secondary erasure.

## [3-3] SCANNER CLEANING

Rotates the light-collecting mirror axis to clean the light-collecting surface of the light-collecting guide.

The function of this menu is the same as the scanner cleaning function in the User Utility.

### ■ Procedure

(1) [3] [ENT] → [3] [ENT]

The machine then performs a scanner cleaning operation.

### ■ Display

```
|TST>3 .............................................. (1)  |
|COMMAND IS IN PROGRESS.                                   |
|RESULT : OK                                               |
```

## [3-4] NETWORK

Checks the network connection.

### [3-4-1] PING (AUTO)

**CAUTION**

*With software version A02 or earlier, this feature is not implemented, so it should not be used.*

Transmits a message to all IP addresses entered in the configuration file to verify the network connection.

### [3-4-2] PING (MANUAL)

Transmits a message form the CPU12A board of the RU to a specified address to verify the network connection.

**■ Procedure**

(1) [3] [ENT] → [4] [ENT]

The display then prompts you to specify the IP address.

(2) Enter an IP address.

The system then checks the connection to the entered IP address.

### [3-4-3] DISPLAY FTP-SERV

**CAUTIONS**

- *With software version A02 or earlier, this feature is not implemented, so it should not be used.*
- *This feature is for design analysis only. Do not use this feature in the market (for regular servicing purposes).*

Accesses the CL’s FTP server to verify that files can be accessed.

# [4] ELECTRICAL UTILITY

Runs diagnostics to check whether the electrical components are normal.

## ■ Function

### ● AUTO MODE/BOARD TEST/SUB CPU TEST:

Conducts memory and interrupt control tests of RU PC boards. You can execute a series of tests automatically or conduct preselected tests.

### ● POWER SUPPLY MONITOR:

Checks all RU PC boards for blown fuses.

### ● DISPLAY HARDWARE SWITCH:

Displays the CPU12A board's DIP switch setup.

### ● BARCODE TEST:

Performs a barcode reader test.

## [4-1] AUTO MODE

Runs self-diagnostic checks on the PC boards by conducting a series of PC board tests.

### ■ Procedure

(1) [4] [ENT] → [1] [ENT] → [2] [ENT]

The display then prompts you to enter the number of times you want to repeat the testing cycle.

(2) Enter “3” (for performing the testing process three times).

The system then repeats the PC board testing cycle the specified number of times (three times). When the testing process ends normally, the display reads “RESULT: OK”.

To abort the testing process during its execution, press the [Ctrl] and [C] keys simultaneously and then press the [ENT] key.

### ■ Display

```
|EU>AT> 2 ............................................... (1) |
|                                                              |
|INPUT REPEAT TIMES.                                           |
|INPUT(0 - 99999):3 ...................................... (2) |
|                                                              |
|COMMAND IS IN PROGRESS.                                       |
|INTERRUPTION : HIT[^C] + ENT KEY                              |
|                                                              |
|COUNT : 00001                                                 |
|COUNT : 00002                                                 |
|COUNT : 00003                                                 |
|                                                              |
|RESULT : OK                                                   |
```

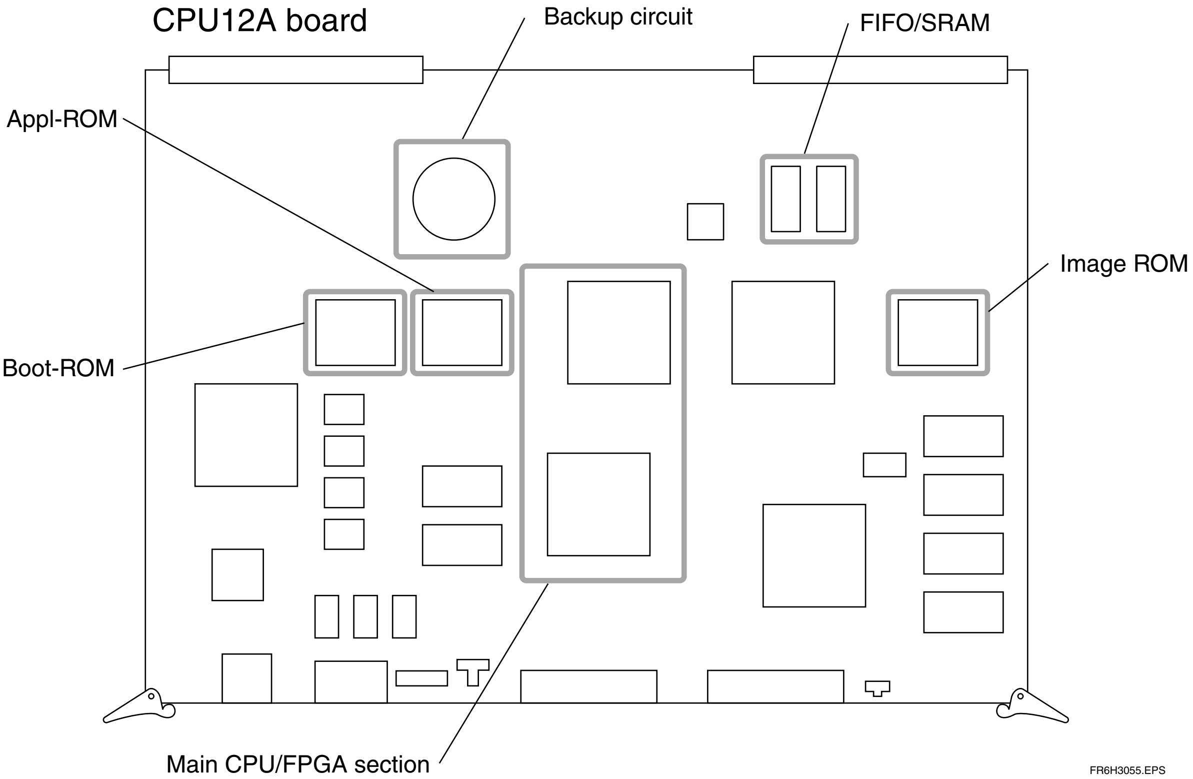
## [4-1-1] ALL

Runs all the self-diagnostic checks between [4-1-2] and [4-1-6] (CPU12A, SCN12A, INV12A, SNS12A, DRV12A, and SUBCPU).

You can repeat execution within a range of 1 to 99999.

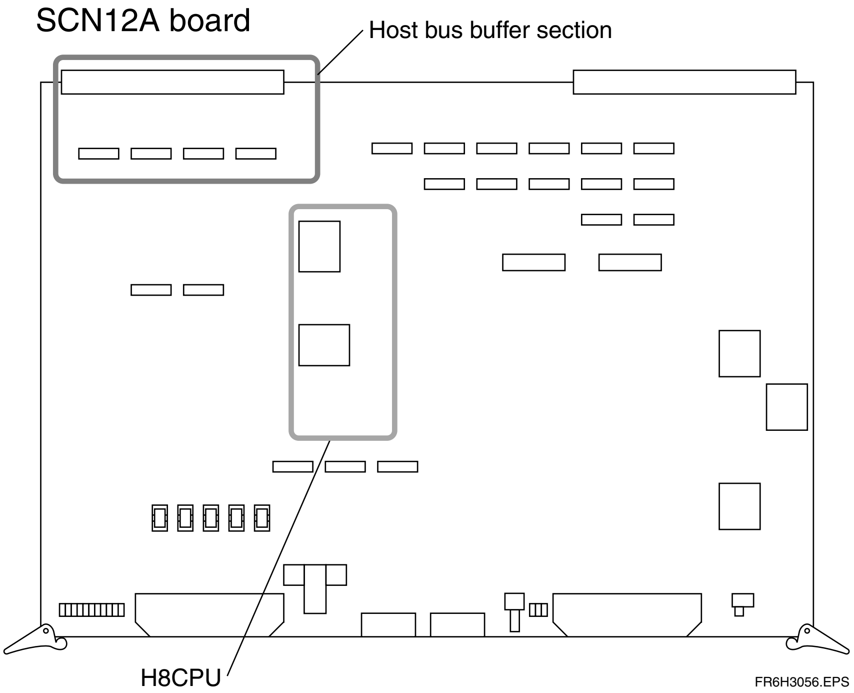
## [4-1-2] CPU12A

Runs diagnostic checks on the following parts of the CPU12A board. You can repeat execution within a range of 1 to 99999.


CPU12A board
Backup circuit
FIFO/SRAM
Appl-ROM
Image ROM
Boot-ROM
Main CPU/FPGA section
FR6H3055.EPS

## [4-1-3] SCN12A

Runs diagnostic checks on the following parts of the SCN12A board. You can repeat execution within a range of 1 to 99999.

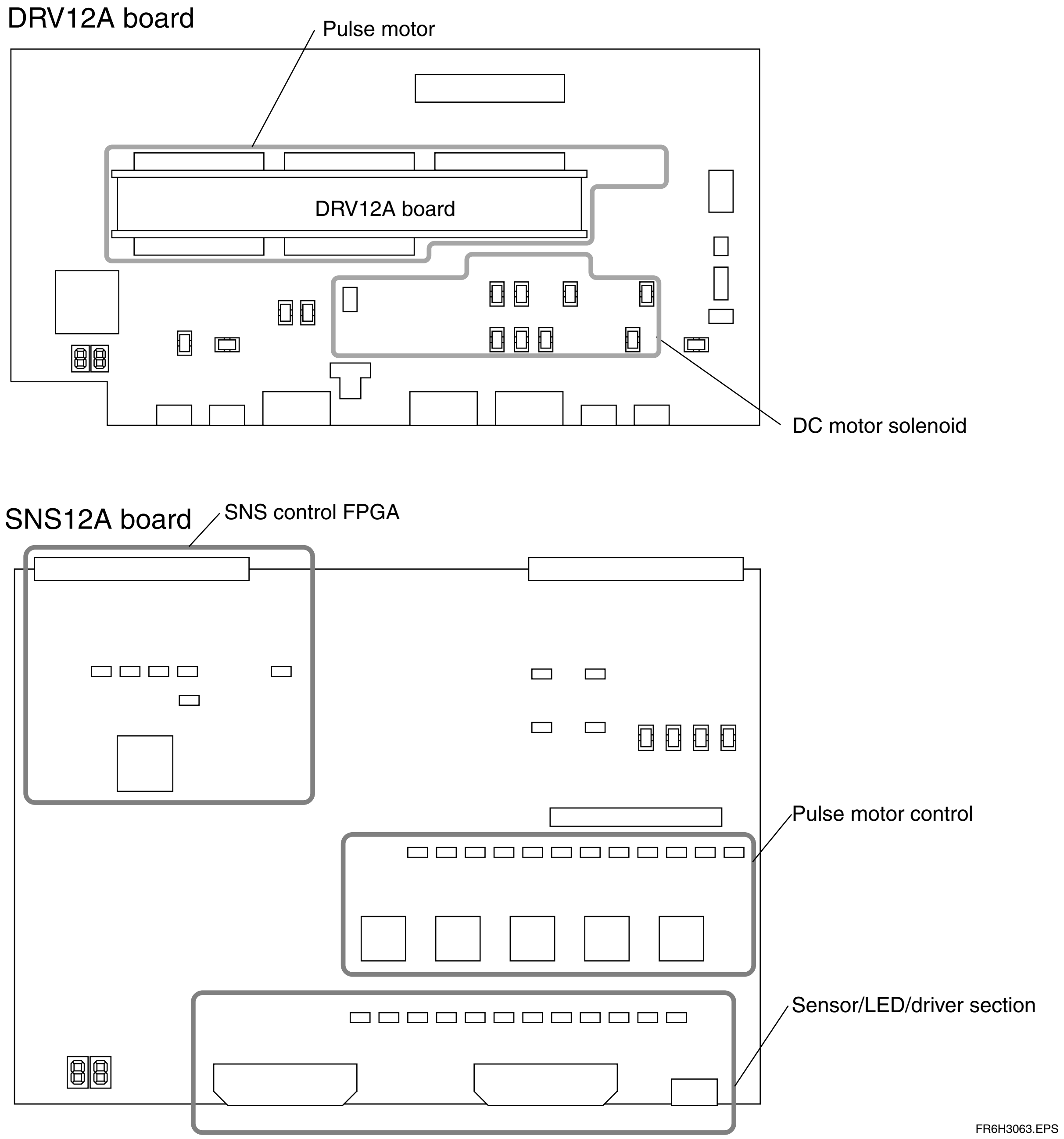

SCN12A board
Host bus buffer section
H8CPU
FR6H3056.EPS

## [4-1-4] INV12A

Runs diagnostic checks on the following parts of the INV12A board. You can repeat execution within a range of 1 to 99999.

## [4-1-5] SND12A

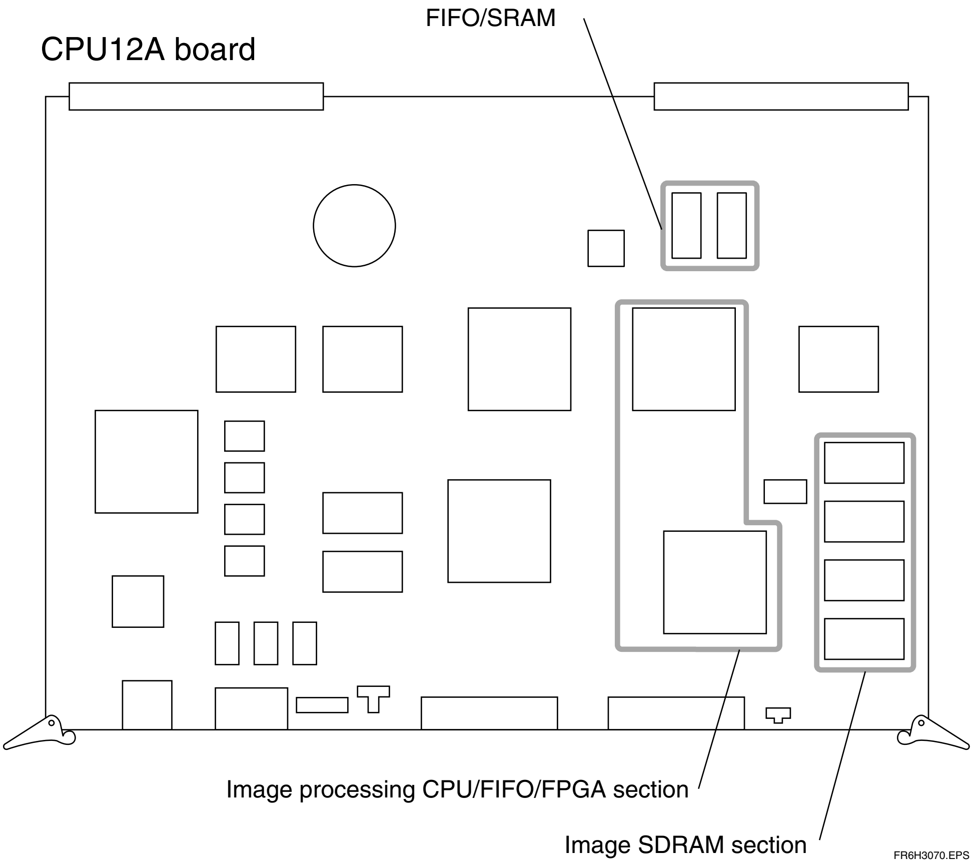
Runs diagnostic checks on the following parts of the SND12A board. You can repeat execution within a range of 1 to 99999.


DRV12A board
Pulse motor
DRV12A board
DC motor solenoid
SNS12A board
SNS control FPGA
Pulse motor control
Sensor/LED/driver section

FR6H3063.EPS

## [4-1-6] SUB CPU

Runs self-diagnostic checks on the following parts of the sub-CPU. You can repeat execution within a range of 1 to 99999.


CPU12A board
FIFO/SRAM
Image processing CPU/FIFO/FPGA section
Image SDRAM section
FR6H3070.EPS

## [4-2] BOARD TEST

Conducts various PC board tests on an individual basis for self-diagnostic checkout of each functional block.

### [4-2-1] CPU12A

Runs a self-diagnostic check on each functional block of the CPU12A board.

[ 1 ] BACKUP MEMORY TEST:

Tests the backup memory.

[ 2 ] SDRAM TEST:

Tests the main memory.

[ 3 ] MAIN IPL CHECK SUM TEST:

Compares the IPL program on the board with the program of the FTP server (CL) for checkout purposes.

[ 4 ] MAIN APPL CHECK SUM TEST:

Compares the application program on the board with the program of the FTP server (CL) for checkout purposes.

[ 5 ] MAIN APPL ROM R/W TEST:

Tests the main application ROM.

[ 6 ] INTERRUPT TEST:

Tests the interrupt control.

[ 7 ] REGISTER (ETH) TEST:

Conducts a register test.

## [4-2-2] SCN12A

Runs a self-diagnostic check on each functional block of the SCN12A board.

[ 1 ] REGISTER (ETH) TEST:

Conducts a register test.

[ 2 ] INTERRUPT TEST:

Tests the interrupt control.

[ 3 ] H8 COMMUNICATION TEST:

Communicates with the CPU (H8) on the SCN12A board to verify the normal return.

## [4-2-3] SND12A

Runs a self-diagnostic check on each functional block of the SND boards (SNS12A and DRV12A boards).

[ 1 ] REGISTER (ETH) TEST:

Conducts a register test.

[ 2 ] SENSOR TEST:

Tests the control signal output to a sensor.

[ 3 ] LED TEST:

Tests the control signal output to an LED.

[ 4 ] SOLENOID TEST:

Tests the control signal output to a solenoid.

[ 5 ] PULSEMOTOR TEST:

Tests the control signal output to a motor.

[ 6 ] INTERRUPT TEST:

Tests the interrupt control.

## [4-2-4] INV12A

Runs a self-diagnostic check on each functional block of the INV12A board.

[ 1 ] REGISTER TEST:

Conducts a register test.

[ 2 ] LAMP TEST:

Checks for erasure lamp illumination.

## [4-3] SUB CPU TEST

Tests the SDRAM and FIFO memory of the sub-CPU (digital data processing CPU) on the CPU12A board. Also allows you to output a pattern image or generate an image re-output.

[ 1 ] SDRAM TEST:

Tests the SDRAM.

[ 2 ] FIFO TEST:

Tests the FIFO memory.

## [4-3-1] SDRAM TEST

Tests the SDRAM of the sub-CPU.

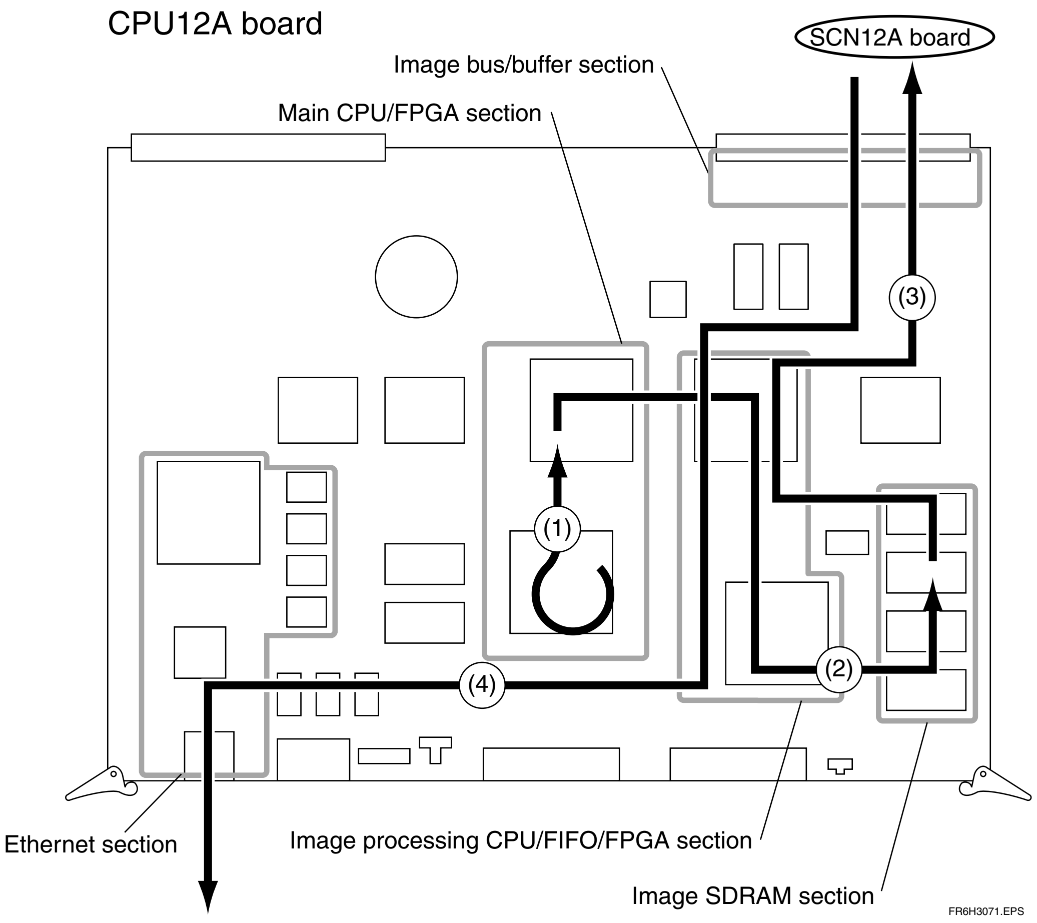
## [4-3-2] FIFO TEST

Tests the FIFO memory.

## [4-3-3] OUTPUT PATTERN IMAGE

Outputs pattern images of various IP sizes.

The flow of pattern image generation is shown below:


CPU12A board
SCN12A board
Image bus/buffer section
Main CPU/FPGA section
(1)
(2)
(3)
(4)
Ethernet section
Image processing CPU/FIFO/FPGA section
Image SDRAM section
FR6H3071.EPS

(1) The main CPU generates image data.

(2) The main CPU sends the image data to the SDRAM of the sub-CPU.
The image data is sent to the sub-CPU SDRAM via the system bus.

(3) The sub-CPU sends the image data to the SCN board.
The image data is sent to the SCN board via the image bus.

(4) The system generates an image output.
The image data fed from the SCN12A board is transferred out via the network.

## ■ Example where a Pattern Image of 14"x14" Size is Outputted (For 1-to-1 Connection)

◆ ***NOTE*** ◆

*For a 1-to-1 connection setup, the following errors may occur.*

- *If the command is executed while the cassette loading lamp is not illuminated:*
  → *Error code 13011: A04 or earlier*
  → *Error code 11401: A05 or later*
- *If the command is executed while the examination menu has not been registered:*
  → *Error code 11401: A05 or later*

### ● Procedure

(1) Register the examination menu.

Select the menu on the CL and register it.

(2) Make the RU ready for reading.

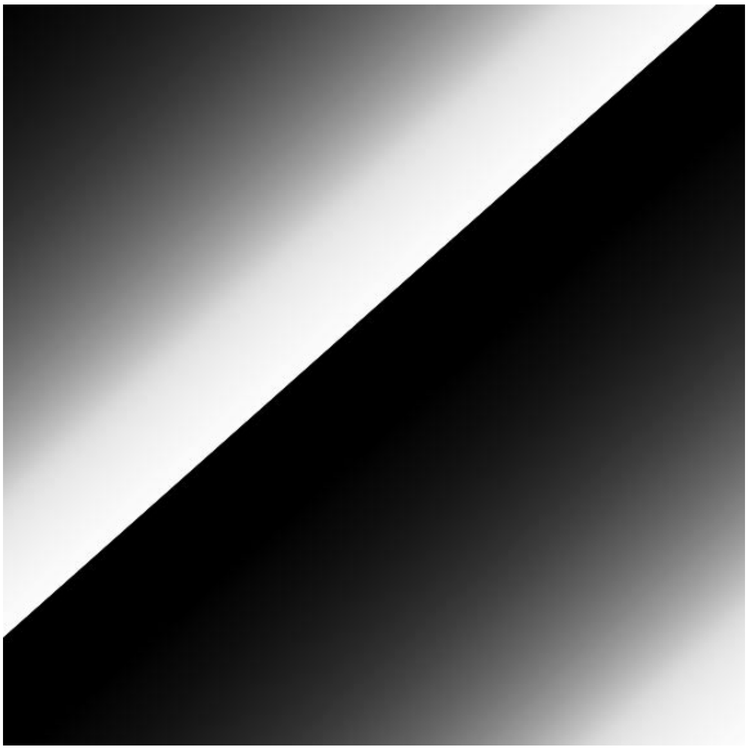
Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(3) [4][ENT] → [3][ENT] → [3][ENT]

A menu then opens, prompting you to select an output image size.

(4) Enter “2” (14"x14").

The system then outputs an image presented below. When the image output process ends normally, the display reads “RESULT: OK”.



## ■Display

```
|EU>SBCPU>3 ........................................ (2)  |
|                                                         |
|0.QUIT                                                   |
|1.14"x17"                                                |
|2.14"x14"                                                |
|3.10"x12"                                                |
|4.8"x10"                                                 |
|5.24x30                                                  |
|6.18x24                                                  |
|EU>SBCPU>IMGOUT>2 .................................. (3)  |
|                                                         |
|COMMAND IS IN PROGRESS.                                  |
|RESULT : OK                                              |
```

## ■ Example where a Pattern Image of 14"x14" Size is Outputted (For N-to-N Connection)

**◆ *NOTE* ◆**

*For an N-to-N connection setup, the following error may occur.*
- *If the command is executed while the CL is not ready for processing:*
- *If the command is executed while the examination menu has not been registered:*
- *If the command is executed while the barcode has not been entered:*
  *→ Error code 11404*

### ● Procedure

(1) Register the examination menu and barcode.

Select the menu on the CL and manually register the barcode. It should be noted that any barcode might be registered for this purpose.

(2) [4][ENT] → [3][ENT] → [3][ENT]

A menu then opens, prompting you to select an output image size.

(3) Enter “2” (14"x14").

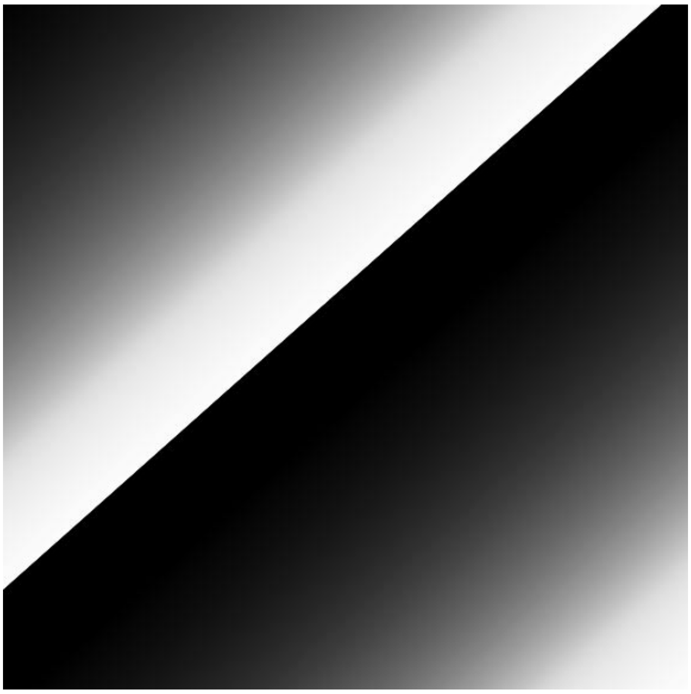
A message appears on the CL to prompt you to enter the barcode.

(4) Select the “IP# Input” button.

A dialog box appears to enter the barcode.

(5) Enter the barcode that has been registered in step (1).

The system then outputs an image presented below. When the image output process ends normally, the display reads “RESULT: OK”.



## ● Display

```
|EU>SBCPU>3 ............................................ (2)  |
|                                                             |
|0.QUIT                                                       |
|1.14"x17"                                                    |
|2.14"x14"                                                    |
|3.10"x12"                                                    |
|4.8"x10"                                                     |
|5.24x30                                                      |
|6.18x24                                                      |
|EU>SBCPU>IMGOUT>2 ..................................... (3)  |
|                                                             |
|COMMAND IS IN PROGRESS.                                      |
|RESULT : OK                                                  |
```

## [4-3-4] RE-OUTPUT IMAGE

Re-outputs an image.

**◆ *NOTE* ◆**

*After bootup, if "RE-OUTPUT IMAGE" is executed without performing the reading operation at all, the following error will occur.*
*→ Error code: 13011*

### ■ Example where Image is Re-outputted in 1-to-1 Connection

**◆ *NOTE* ◆**

*For a 1-to-1 connection setup, the following errors may occur.*

- *If the command is executed while the cassette loading lamp is not illuminated:*
  *→ Error code 13011: A04 or earlier*
  *→ Error code 11401: A05 or later*
- *If the command is executed while the examination menu has not been registered:*
  *→ Error code 11401: A05 or later*

#### ● Procedure

(1) Cancel the ready-for-reading state of the RU.

Manipulate the CL to cancel the ready-for-reading state of the RU (with the cassette loading lamp not illuminated).

(2) [4] [ENT] → [3] [ENT] → [4][ENT]

The system then outputs an image.

#### ● Display

```
|EU>SBCPU>4 .............................................. (1)  |
|                                                                |
|COMMAND IS IN PROGRESS.                                         |
|RESULT : OK                                                     |
```

## ■ Example where Image is Re-outputted in N-to-N Connection

**◆ *NOTE* ◆**

*For an N-to-N connection setup, the following error may occur.*
*• If the command is executed while the CL is not ready for processing:*
*• If the command is executed while the examination menu has not been registered:*
*• If the command is executed while the barcode has not been entered:*
→ *Error code 11404*

(1) Register the examination menu and barcode.

Select the menu on the CL and manually register the barcode. It should be noted that any barcode might be registered for this purpose.

(2) [4][ENT] → [3][ENT] → [4][ENT]

The system then outputs an image.

## [4-4] POWER SUPPLY MONITOR

Automatically checks all PC boards for blown fuses. Note, however, that this menu item may not work if the CPU12A board is faulty.

### ■ Procedure

(1) [4] [ENT] → [4] [ENT]

The system then checks for blown fuses. When the fuse checkout process ends normally, the display reads “RESULT: OK”.

### ■ Display

```
|EU>4 ............................................   (1) |
|RESULT : OK                                             |
```

## [4-5] DISPLAY HARDWARE SWITCH

Displays the settings of the DIP and slide switches on the CPU12A board.

### ■ Procedure

(1) [4] [ENT] → [5] [ENT]

The system then checks and displays the switch settings.

### ■ Display

```
|EU>5 .................................................... (1)  |
|                                                               |
|Slide-Sw on CPU12A                                             |
|(Left:REMOTE/Right:LOCAL)          :     Right                 |
|                                                               |
|DIP-SW on CPU12A                                               |
| No.1— IMPOSSIBLE TO READ  (FOR ONLY HARD SETTING) —           |
| No.2(0:NORMAL/1:DEBUG)            :                      0    |
| No.3(0:INCH/1:METRIC)             :                      1    |
| No.4(0:NONE/1:BCR SETTING)        :                      1    |
| No.5(0:NORMAL/1:DRAM TEST)        :                      0    |
| No.6(RESERVE)                     :                      0    |
| No.7(RESERVE)                     :                      0    |
| No.8(0:NORMAL/1:FT BOOT)          :                      0    |
```

## [4-6] BARCODE TEST

**◆ *NOTES* ◆**

- *If you conduct the "[4-6] BARCODE TEST" when the CPU12A board DIP switch is set so as not to use the optional barcode reader, the display always reads "RESULT: OK".*
- *Since the function of "[4-6-2] READ TEST" has been changed between version A02 or earlier and version A03 or later, their respective procedures should be performed as appropriate.*

### [4-6-1] COMMUNICATION

Sends a control command to the barcode reader to check for a response.

#### ■ Procedure

(1) [4] [ENT] → [6] [ENT]

(2) Choose "1" (COMMUNICATION).

The system then checks for a response from the barcode reader. When the checkout process ends normally, the display reads "RESULT: OK".

#### ■ Display

```
|EU>6 ........................................... (1) |
|                                                     |
|0.QUIT                                               |
|1.COMMUNICATION                                      |
|2.READ TEST                                          |
|EU>BCR>1 ....................................... (2) |
|RESULT : OK                                          |
```

## [4-6-2] READ TEST

Checks whether the barcode can be read normally.

◇ ***REFERENCE*** ◇

*When "READ TEST" is to be executed, it is necessary to make the RU ready for reading (with the cassette loading lamp illuminated).*
*Unless the RU is ready for reading, barcode reading will not be performed.*

### ■ Procedure: For software version A02

(1) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(2) [6][ENT] → [4][ENT] → [1][ENT] → [2][ENT]

The system then executes IP feed of the MECHANICAL UTILITY.

(3) Set a barcode-ready IP cassette into the IP set unit.

The IP is fed.

(4) [0][ENT] → [0][ENT] → [0][ENT]

The MECHANICAL UTILITY then closes with the IP feed in progress.

(5) [4][ENT] → [6][ENT]

(6) Select "2" (READ TEST).

(7) Remove the IP set unit cover and manually rotate the conveyance roller and so forth to convey the IP that has been fed, to a position where the barcode reader is located.

When the barcode is read normally, the display reads "RESULT: OK".

If the barcode cannot be read even under condition where the barcode is located at the barcode reading position, the barcode reader is faulty.

### ■ Display: For Software Version A02

```
|EU>6 ............................................. (5)  |
|                                                        |
|0.QUIT                                                  |
|1.COMMUNICATION                                         |
|2.READ TEST                                             |
|EU>BCR>2 ......................................... (6)  |
|COMMAND IS IN PROGRESS                                  |
|INTERRUPTION : HIT[^C] + ENT KEY.                       |
|RESULT : OK                                             |
```

## ■ Procedure: For software version A03 or later

(1) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(2) [4][ENT] → [6][ENT]

(3) Select “2” (READ TEST).

(4) Set a barcode-ready IP cassette into the IP set unit.

The IP is fed, and when the barcode is read normally, the display reads “RESULT: OK”.

### ◇ *REFERENCES* ◇

- *If the barcode cannot be read through a single conveyance, the IP is conveyed again by setting the IP cassette into the IP set unit once again. If the barcode cannot still be read, an error results.*
- *If “READ TEST” is executed with such DIP switch setting on the CPU12A board as not to use the barcode, the display always reads “RESULT: OK”, no matter whether the barcode is available or not.*

## ■ Display: For software version A03 or later

```
|EU>6 ............................................... (2)  |
|                                                           |
|0.QUIT                                                     |
|1.COMMUNICATION                                            |
|2.READ TEST                                                |
|EU>BCR>2 ........................................... (3)  |
|COMMAND IS IN PROGRESS : OK                                |
|INTERRUPTION : HIT[^C] + ENT KEY.                          |
|RESULT : OK                                                |
```

## [5] SCANNER UTILITY

Sets the scanner unit and checks its operation.

### ■ Function

- INITIALIZE: Initializes the scanner.
- POLYGON: Checks the operation of the polygon.
- LASER: Checks the operation of the laser.
- SAVE INITIAL LDIF: Shall not be used because it is intended for design analysis purposes.
- HV STATUS: Displays the status of the HV switch.
- HV ON/OFF: Turns ON and OFF the HV switch (software switch).
- HV DATA: Checks the HV voltage command value that is outputted from the SCN12A board.
- FORMAT: Fine-tunes the read start position (PIXEL) and read width (FREQ).
- SHADING/SENSITIVITY: Makes shading and sensitivity corrections.
- DATA MANAGEMENT: Saves the scanner data into the FTP server (CL) and loads the saved scanner data.
- DIAGNOSTIC: Starts the polygon and runs a self-diagnostic check on the scanner.
- VIRTUAL IMAGE: Causes the light-collecting section to generate image data.

## [5-1] INITIALIZE

Initializes the scanner.

In the initialization process, the main-scanning parameters for the scanner are downloaded from the CPU12A board flash memory into the SDRAM and then downloaded from the CPU12A board into the SCN12A board. Further, the laser and polygon are turned OFF in this initialization process.

### ■ Procedure

(1) [5] [ENT] → [1] [ENT]

The system then performs the scanner initialization process. When the process ends normally, the display reads “RESULT: OK”.

### ■ Display

```
|SCN>1 ............................................. (1)  |
|                                                          |
|COMMAND IS IN PROGRESS                                    |
|RESULT : OK                                               |
```

## [5-2] POLYGON

Turns ON and OFF the polygon.

When the polygon ON signal is generated, the polygon ON signal LED on the SCN12A board comes on.

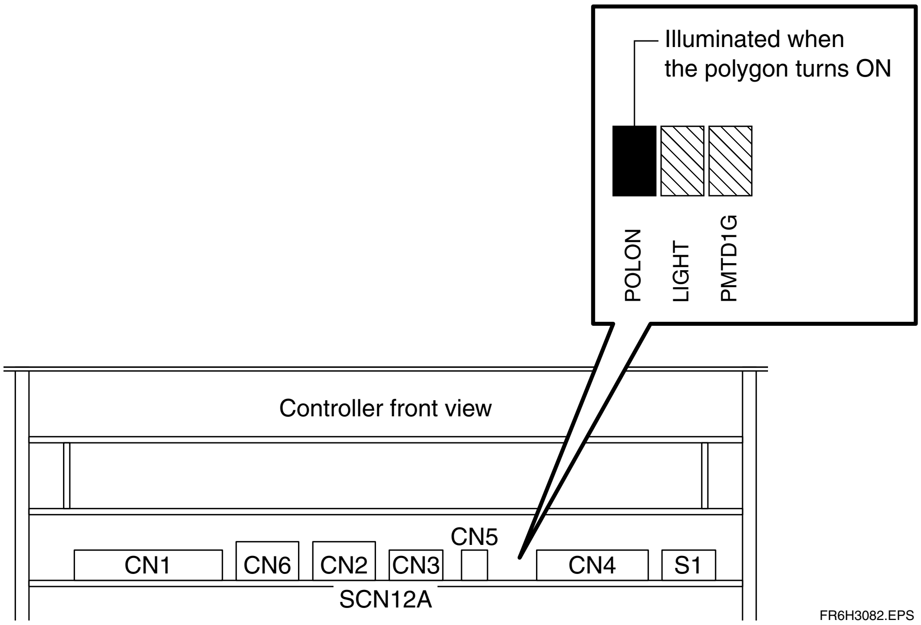
**CAUTION**

*If the cover must be removed to gain access to the LED on the SCN12A board, turn OFF the HV switch before removing the cover.*
*If the cover is removed with the HV switch in the ON position, the photomultiplier will be damaged.*

### ■ Procedure

(1) [5] [ENT] → [2] [ENT] → [2] [ENT]

The polygon then turns ON and then the display reads “RESULT: OK”. If the polygon ON signal LED on the SCN12A board does not come on in this instance, the SCN12A board is faulty.


Illuminated when the polygon turns ON
POLON
LIGHT
PMTD1G
Controller front view
CN1
CN6
CN2
CN3
CN5
CN4
S1
SCN12A
FR6H3082.EPS

(2) [1] [ENT]

The polygon then turns OFF.

### ■ Display

```
|SCN>POLY>2 ........................................ (1)  |
|RESULT : OK                                              |
|                                                         |
|0.QUIT                                                   |
|1.OFF                                                    |
|2.ON                                                     |
|SCN>POLY>1 ........................................ (2)  |
|RESULT : OK                                              |
```

## [5-3] LASER

Turns ON and OFF the laser.

When the laser turns ON, the system turns ON the polygon and runs a diagnostic check on the polygon and laser.

**CAUTION**

*While the laser is ON, do not turn OFF the polygon. If you turn OFF the polygon with the laser turned ON, the laser light may fall upon a single spot, causing a risk of machine failure or fire.*

### ■ Procedure

(1) [5] [ENT] → [3] [ENT] → [2] [ENT]

This causes the laser and polygon to turn ON, and the display reads one of the following values and “RESULT: OK”.

| | |
|---|---|
| • LDIFINT: | LD amperage value at the time of shipping from factory |
| • LDIFNOW: | Current LD amperage value |
| • LDIFNOW/LDIFINT: | Value indicative of how much the amperage value has dropped, since shipping from factory until now. |

**◇ *REFERENCE* ◇**

*When the value of LDIFNOW/LDIFINT drops below 0.6, an error code is displayed.*

(2) [1] [ENT]

The laser and polygon then turn OFF.

### ■ Display

```
|SCN>LZR>2 ........................................ (1) |
|                                                        |
|Laser ON                                                |
|LDIFINT : 127.66                                        |
|LDIFNOW : 127.33                                        |
|LDIFNOW/LDIFINT : 0.99                                  |
|RESULT : OK                                             |
|                                                        |
|0.QUIT                                                  |
|1.OFF                                                   |
|2.ON                                                    |
|SCN>LZR>1 ........................................ (2) |
|RESULT : OK                                             |
```

## [5-4] SAVE INITIAL LDIF

**CAUTION**

*This feature is for design analysis only. Do not use this feature in the market (for regular servicing purposes). If it is used inadvertently, install the machine shipment control data for the optical system.*

### [5-4-1] GET DATA FROM SCN, SAVE TO RAM & FLASH & FTP-SERV

Acquires machine shipment control data from the scanner and sets the acquired values in the SDRAM, flash memory, and FTP server.

### [5-4-2] SAVE DEFAULT DATA TO RAM & FLASH & FTP-SERV

Restores the machine shipment control data in the SDRAM, flash memory, and FTP server to the default values.

## [5-5] HV STATUS

Displays the HV switch setting.

### ◇ *REFERENCE* ◇

*The display reads “OFF” when either the software switch or the hardware switch is OFF.*

## ■ Procedure

(1) [5] [ENT] → [5] [ENT]

This causes the display to show the HV switch setting and then the message “RESULT: OK”.

## ■ Display

```
SCN>5 ............................................. (1)
HV ON
RESULT : OK
```

## [5-6] HV ON/OFF

Turns ON or OFF the HV switch (software switch).

When you execute “[5-6] HV ON/OFF”, the system checks the HV switch setting and then turns ON or OFF the HV switch.

When the system turns ON the HV switch, it checks the response from the photomultiplier board and then displays the result.

**CAUTION**

*Before turning ON the HV switch (software switch), check to see whether the cover is installed. If the HV switch is turned ON with the cover removed, the photomultiplier will be damaged.*

### ■ Procedure

(1) [5] [ENT] → [6] [ENT] → [2] [ENT]

This causes the display to show the HV switch setting and then the message “RESULT: OK”.

### ■ Display

```
|SCN>HV>2 ...................................... (1)  |
|HV ON                                                |
|RESULT : OK                                          |
```

**◇ REFERENCE ◇**

*If the HV switch (hardware switch) on the SCN12A board is OFF, the displays reads “HV OFF and “RESULT: OK” even when the HV software switch turns ON.*

```
|SCN>HV>2                                             |
|HV OFF                                               |
|RESULT : OK                                          |
```

## [5-7] HV DATA

When you enter an HV voltage value between 255 and 667 V, the system checks whether the command value output from the SCN12A board is equal to the entered value.

### ◇ *REFERENCE* ◇

*If the HV switch (software or hardware switch) is OFF, the displays reads “HV OFF” and “RESULT: OK” even when you enter an HV voltage value.*

### ■ Procedure

(1) [5] [ENT] → [7] [ENT]

A message then appears to prompt for the input of an HV voltage value. If the HV switch is OFF in this instance, the display reads “HV OFF” and then “RESULT: OK”.

(2) Enter the value “300” (HV voltage).

### ■ Display

```
|SCN>7 .............................................. (1) |
|                                                         |
|INPUT HIGH-VOLTAGE'S DA DATA                             |
|INPUT(250 - 667[V]):300 ............................ (2) |
|RESULT : OK                                              |
```

## [5-8] FORMAT

Fine-tunes the read start width (FREQ) and read start position (PIXEL).

**◇ *REFERENCE* ◇**

*Use the "FORMAT" menu when the format needs to be fine-tuned in situations where the machine shipment control data is installed. You should also use this menu when inter-unit adjustments are needed due, for instance, to simultaneous replacement of the subscanning unit and side-positioning conveyor.*

**◆ *NOTES* ◆**

- *Once the setting is changed, the result of that change becomes effective immediately.*
- *Because the value that has been changed becomes ineffective when the machine is rebooted, you must perform "BACKUP" of the configuration if you want to keep the setup value effective after reboot or to save the setup value.*

### ■ Function

- DEFAULT: Restores the settings of the read width (FREQ) and read start position (PIXEL) to their default values.
- FREQ ADJUST: Fine-tunes the read width (FREQ).

  It makes fine adjustments when the size of the output image is enlarged or reduced in the horizontal (main scan) direction.
- PIXEL ADJUST: Fine-tunes the read start position (PIXEL).

  It fine-tunes the image output position to the right or left when any horizontal white blank appears on the output image or when the image is cut off (when there is some non-outputted portion).

**◇ *REFERENCES* ◇**

- *When both the read width (FREQ) and read start position (PIXEL) are to be adjusted, the read width should be first adjusted. If the read start position is first adjusted, it may be necessary to adjust the read start position again as a result of the read width adjustment.*
- *The value that has been set in the "FORMAT" menu becomes ineffective when the machine is rebooted. You must perform "BACKUP" of the configuration if you want to keep the setup value effective after reboot.*

## [5-8-1] DEFAULT

Restores the current settings for the read start position (PIXEL) and read width (FREQ) to the default values.

### ◇ *REFFERENCE* ◇

*When you select the default settings, the system adjusts the output image position to make IP edges visible, indicating that the default settings are used.*

[ 1 ] PIXEL AND FREQ:

Restores both the read start position and read width to the default values.

[ 2 ] PIXEL ONLY:

Restores only the read start position to the default value.

[ 3 ] FREQ ONLY:

Restores only the read width to the default value.

### ■ Procedure: Example where both the read start position and read width are restored to the default values

(1) [5] [ENT] → [8] [ENT] → [1] [ENT] → [1] [ENT]

The system restores the read start position and read width to their default values and the display reads “RESULT: OK”.

### ■ Display

```
|SCN>FMT>DEF>1 ......................................... (1)  |
|RESULT : OK                                                  |
```

## [5-8-2] FREQ ADJUST

Adjusts the read width (FREQ) over a range from -5.00 to +5.00%. Any entry outside the acceptable range will be invalidated.

### ■ Procedure: Example of 3% enlargement

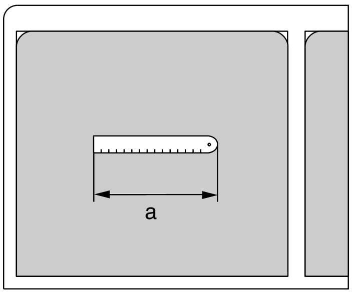
(1) Place a 150-mm steel rule on an IP of 14"x14" (35cm x 35cm) or 14"x17" (35cm x 43cm) size (in such an orientation that it becomes longer in the main scan direction), and expose it at about 1 mR.

At least two IPs should be exposed for checks before and after adjustment.

(2) Read one of the IPs provided in step (1), and outputs its image.

(3) Measure any drift in the read width.

Measure the actual size of the 150-mm steel rule and the size of the white blank portion, and calculate the adjustment value according to the formula shown below.



$$\frac{\left(\text{Actual size of steel rule}\left(\frac{a}{\text{Reduction factor}}\right)\right)}{\text{Actual size of steel rule}} \text{x100=Adjustment value (\%)}$$

Measure “a” on the output film.

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(4) [5][ENT] → [8][ENT] → [2][ENT]

The display prompts for the input of the read width adjustment value.

(5) Enter the read width adjustment value (for example, “3”) calculated in step (3).

The read width is then adjusted accordingly.

◇ ***REFERENCE*** ◇

*The output image is reduced when a negative-quantity (“-” signed) read width is entered, and enlarged when a positive-quantity (“+” signed) read width is entered.*

(6) Read one of the IPs provided in step (1), and output its image.

(7) Measure the actual size of the 150-mm steel rule and the size of the white blank portion, and make sure that there is no drift between them.

If there is any drift, reset the RU and then make adjustments again.

## ■ Display

```
|SCN>FMT>3 ......................................... (4)  |
|                                                         |
|INPUT : INVALID PIXELS.                                  |
|INPUT(-70 - +70):40 ................................ (5)  |
|RESULT : OK                                              |
```

## [5-8-3] PIXEL ADJUST

Fine-tunes the read start position (PIXEL).

Any entry outside the adjustable range will be invalidated.

### ■ Procedure: To eliminate the 1.5-mm white blank

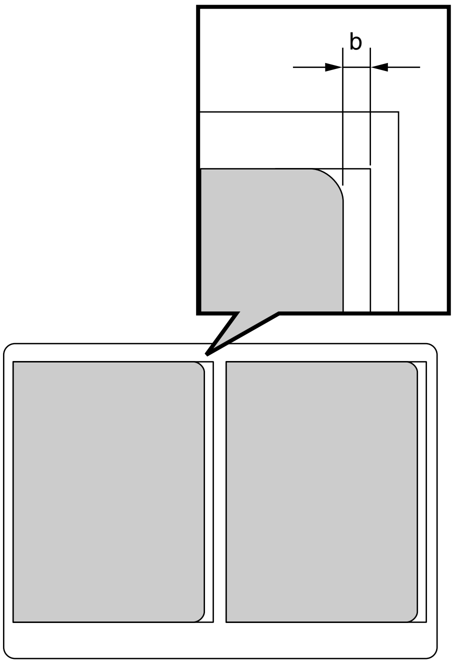
(1) Expose an IP of 14"x14" (35cm x 35cm) or 14"x17" (35cm x 43cm) size at about 1 mR.

At least two IPs should be exposed for checks before and after adjustment.

(2) Read one of the IPs provided in step (1), and output its image.

(3) Measure any drift in the read start position.

Measure the size of the white blank portion, and calculate the adjustment value according to the formula shown below.



$$\left( \frac{b}{\text{Reduction factor}} \text{x10} \right) = \text{Adjustment value (PIXEL)}$$

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(4) [5][ENT] → [8][ENT] → [3][ENT]

The display prompts for the input of the read start position adjustment value.

(5) Enter the read start position adjustment value (for example, “40”) calculated in step (3).

The read start position is then adjusted accordingly.

### ◇ REFERENCE ◇

*The white blank portion of the output image is expanded when a negative-quantity (“-” signed) value is entered, and narrowed when a positive-quantity (“+” signed) value is entered.*

(6) Read one of the IPs provided in step (1), and output its image.

(7) Make sure that there is no white blank portion and the image is not cut off.

## ■ Display

```
|SCN>FMT>3 ........................................... (4)  |
|                                                           |
|INPUT : INVALID PIXELS.                                    |
|INPUT(-999 - +999):40 ................................ (5)  |
|RESULT : OK                                                |
```

## [5-8-4] OPTIC FORMAT

Use this menu when you manually enter the machine shipment control data indicated on the scanning optics unit.

**CAUTION**

*Use "OPTIC FORMAT" only when you manually enter the machine shipment control data indicated on the scanning optics unit.*

### ■ Procedure

(1) Take note of the following values indicated on the label attached on the scanning optics unit top surface.

- "FREQ": Read width
- "PIXO": Read start position

(2) Install the cover.

(3) Start the M-Utility of the RU.

(4) [5][ENT] → [8][ENT] → [4][ENT] → [1][ENT]

A message then appears to prompt for the input of the read width.

(5) Enter the read width (for example, "3").

(6) [2][ENT]

A message then appears to prompt for the input of the read start position.

(7) Enter the read start position (for example, "150").

The display reads "RESULT: OK", and the machine shipment control data is updated.

**◇ *REFERENCE* ◇**

*The value that has been set in the "FORMAT" menu becomes ineffective when the machine is rebooted. You must perform "BACKUP" of the scanning optics data if you want to keep the setup value effective after reboot.*

### ■ Display

```
|SCN>FMT>OPT>1 ........................................ (4)  |
|                                                            |
|INPUT OPICAL PIXELS ADJUSTMENT VALUE.                       |
|INPUT(-5.00 - +5.00):3 ................................ (5) |
|RESULT : OK                                                 |
|SCN>FMT>OPT>2 ........................................ (6)  |
|                                                            |
|INPUT OPICAL PIXELS ADJUSTMENT VALUE.                       |
|INPUT(0 - 500):150 .................................... (7) |
|RESULT : OK                                                 |
```

## [5-9] SHADING/SENSITIVITY

Makes shading and polygon corrections, or allows for the input of sensitivity data (S value).

◇ ***REFERENCE*** ◇

*The value that has been set in the "SHADING/SENSITIVITY" menu becomes ineffective when the machine is rebooted. You must perform "BACKUP" of the light-collecting data if you want to keep the setup value effective after reboot.*

## [5-9-1] SHADING/POLYGON CORRECTION

Enables or disables shading and polygon corrections.

◇ ***REFERENCE*** ◇

*Normally, the RU has "SHADING/POLYGON CORRECTION" enabled (in ON state). If you do not want to perform shading and polygon corrections, turn OFF (disable) "SHADING/POLYGON CORRECTION".*
*If reading is performed with "SHADING/POLYGON CORRECTION" in OFF state, nonuniformity appears on the image even when a uniformly exposed IP is read.*

### ■ Procedure

(1) [5] [ENT] → [9] [ENT] → [1][ENT]

(2) Choose "1" (ON).

The system then checks the setup. When the checkout process ends normally, the display reads "RESULT: OK".

◆ ***INSTRUCTION*** ◆

*Once the setup has been completed, perform "BACKUP" of the light-collecting data to save the data that has been changed in a floppy disk.*
*If the machine is powered OFF without saving, the setup that has been done will be lost.*

### ■ Display

```
|SCN>SS>1 ........................................ (1)  |
|                                                        |
|0.QUIT                                                  |
|1.OFF                                                   |
|2.ON                                                    |
|SCN>SS>COL>1 .................................... (2)  |
|                                                        |
|RESULT : OK                                             |
```

## [5-9-2] CALCULATION

Calculates correction data.

**CAUTION**

*Pay attention to the following points when performing shading and polygon corrections.*

- *Before performing any correction, remove the cassette from the RU. If the cassette remains loaded, no correction will be performed (regular reading is performed).*
- *To perform corrections, be sure to use an IP of either 14"x14" (35cm x 35cm) or 14"x17" (35cm x 43cm) size. If an IP of any other size is used, an error results.*
- *For IPs used for corrections, be sure to use IPs that have been exposed at a dose indicated in the Procedure.*
  *If an IP that has not been exposed is used, an error results.*

### ■ Procedure

(1) Uniformly expose an IP of 14"x14" (35cm x 35cm) or 14"x 17" (35cm x 43cm) size at about 1 mR.

The X-ray dose at the time of exposure should be measured (in “mR”) by use of a calibrated dosimeter.

(2) [5][ENT] → [9][ENT] → [2][ENT] → [1][ENT]

A message then appears to prompt for the input of the X-ray dose.

(3) Enter the X-ray dose measured at the time of exposure (for example, “0.9”).

The system is then ready for calculation of correction data.

To abort the process during its execution, press the [Ctrl] and [C] keys simultaneously and then press the [ENT] key.

(4) Read the IP provided at step (1), using the “SENSITIVITY” menu of “TEST”.

Shading and polygon corrections are performed, and when they end normally, the display reads “RESULT: OK”.

**◆ *INSTRUCTION* ◆**

*Once the correction data calculation has been completed, perform “BACKUP” of the light-collecting data to save the data that has been changed in a floppy disk.*
*If the machine is powered OFF without saving, the correction result will be lost.*

### ■ Display

```
|SCN>SS>CAL>1 ....................................... (2) |
|                                                         |
|INPUT DOSAGE VALUE                                       |
|INPUT(0.50 - 9.99):0.9 .............................. (3) |
|                                                         |
|COMMAND IS IN PROGRESS. ............................. (4) |
|INTERRUPTION : HIT[^C] + ENT KEY.                        |
|RESULT : OK                                              |
```

## [5-9-3] SENSITIVITY DATA

Adjusts the S value indicated on the film.

### ■ Procedure: Example where when the S value of the IP exposed at the reference dose reads “25”, adjustments are made so that it reads “30”

(1) Have on hand an IP exposed at such a dose that the S value reads “25”.

Check the dose at the time of exposure by use of a calibrated dosimeter.

(2) [5][ENT] → [9][ENT] → [3][ENT]

A message then appears to prompt for the input of the S value.

(3) Enter the S value of the output image (for example, “25”).

A message then appears again to prompt for the input of the S value.

(4) Enter the S value to be expected (for example, “30”).

The sensitivity data is then adjusted, and when it ends normally, the display reads “RESULT: OK”.

To abort the process during its execution, press the [Ctrl] and [C] keys simultaneously and then press the [ENT] key.

(5) Read the IP provided in step (1).

Make sure that the S value on the output film reads “30”.

### ■ Display

```
|SCN>SS>3 ............................................. (2) |
|                                                           |
|INPUT CURRENT S VALUE.                                     |
|INPUT(1 - 667[V]):25 ................................. (3) |
|                                                           |
|INPUT EXPECTED S VALUE.                                    |
|INPUT(1 - 667[V]):30 ................................. (4) |
|RESULT : OK                                                |
```

## [5-9-4] HV DATA

**CAUTION**

*This feature is for design analysis only. Do not use this feature in the market (for regular servicing purposes).*

Enters an HV voltage value.

## [5-9-5] PMT DATA

**CAUTION**

*This feature is for design analysis only. Do not use this feature in the market (for regular servicing purposes).*

Enters PMT data.

## [5-10] DATA MANAGEMENT

Saves the scanner data into the FTP server (CL) or loads the saved scanner data.

**CAUTION**

*Never reset the RU or power it OFF while any submenu of “DATA MANAGEMENT” is being executed.*
*During its execution, the RU panel blinks with an audible “beep, beep, beep, ...” alert sounded.*

### [5-10-1] SAVE SCN DATA FROM RAM TO FLASH & FTP-SERV

Saves the scanner data stored in the main memory into the flash memory and FTP server (CL).

### [5-10-2] LOAD SCN DATA FROM FTP-SERV TO RAM & FLASH

Loads the scanner data stored in the flash memory and FTP server into the main memory.

### [5-10-3] DISPLAY SCN DATA ETC

Displays a list of files that have been saved in the FTP server (CL) during the time interval between machine power ON and “[10-3] DISPLAY SCN DATA ETC” execution.

#### ■ Procedure

(1) [5] [ENT] → [10] [ENT] → [3] [ENT] → [3] [ENT]
A file list then appears on the display.

#### ■ Display

```
|SCN>DTM>DISP>3                                                  |
|                                                                |
|SCN_SHDG.DAT                                                    |
|SCN_POLY.DAT                                                    |
|SCN_ISEN.DAT                                                    |
|SCN_IFMT.DAT                                                    |
|SCN_OFMT.DAT                                                    |
|SCN_LDIF.DAT                                                    |
|RESULT : OK                                                     |
```

## [5-11] DIAGNOSTIC

Starts the polygon and runs a diagnostic check on the scanner.

### ◇ *INSTRUCTION* ◇

*Execute "[5-1] INITIALIZE" before executing "[5-11] DIAGNOSTIC".*

### ◇ *REFFERENCE* ◇

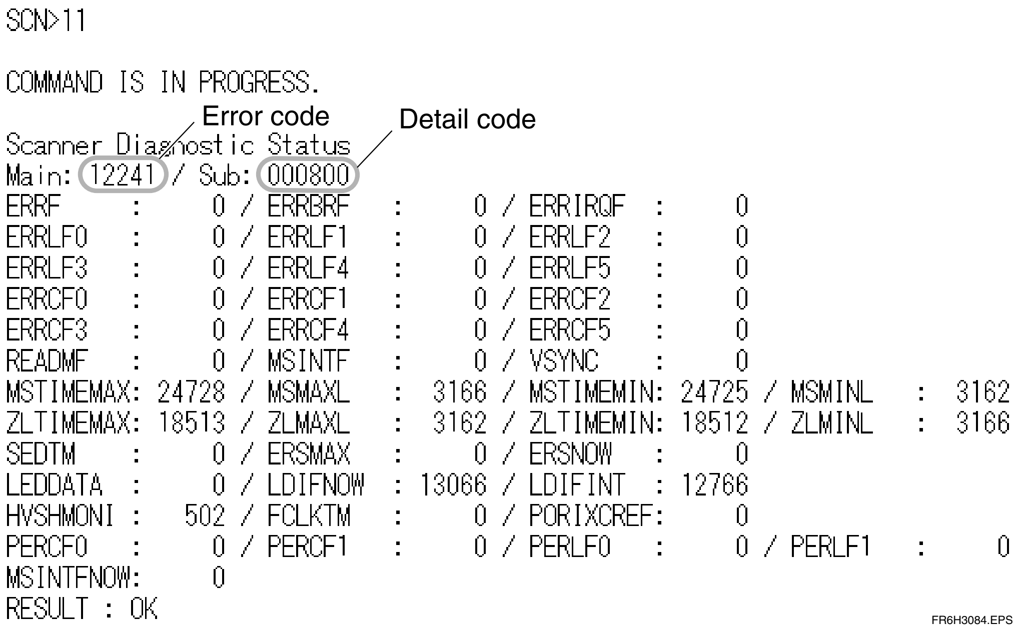
*The display of the Scanner Diagnostic Status window differs depending on the software version.*

## ■ Procedure

(1) [5] [ENT] → [11] [ENT]

The self-diagnostics result is displayed.

## ■ Display: For Versions A01 through A04

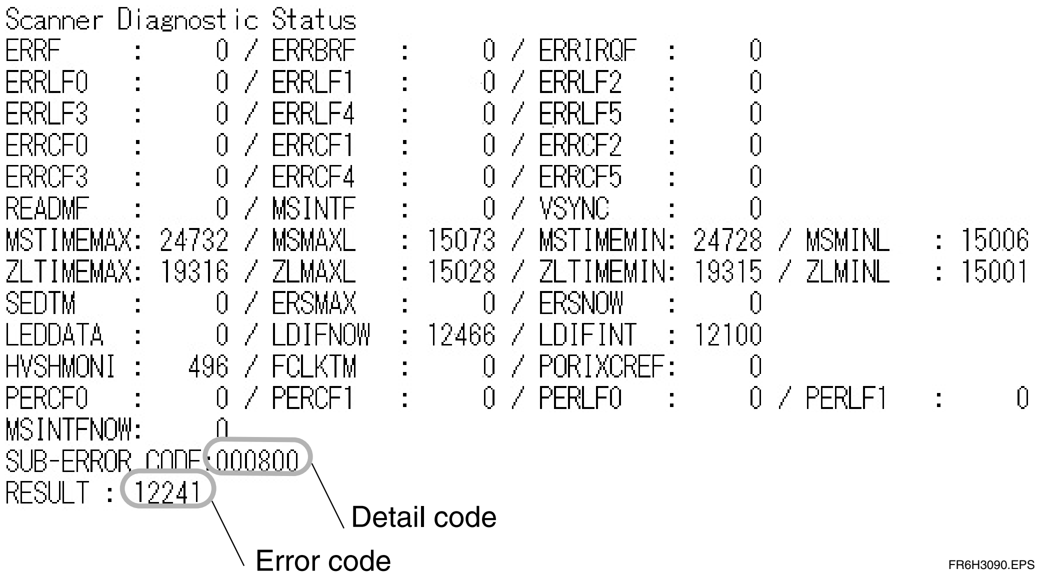


```
SCN>11

COMMAND IS IN PROGRESS.

Scanner Diagnostic Status
Main: 12241 / Sub: 000800
ERRF      :     0 / ERRBRF   :     0 / ERRIRQF  :     0
ERRLF0    :     0 / ERRLF1   :     0 / ERRLF2   :     0
ERRLF3    :     0 / ERRLF4   :     0 / ERRLF5   :     0
ERRCF0    :     0 / ERRCF1   :     0 / ERRCF2   :     0
ERRCF3    :     0 / ERRCF4   :     0 / ERRCF5   :     0
READMF    :     0 / MSINTF   :     0 / VSYNC    :     0
MSTIMEMAX: 24728 / MSMAXL   :  3166 / MSTIMEMIN: 24725 / MSMINL   :  3162
ZLTIMEMAX: 18513 / ZLMAXL   :  3162 / ZLTIMEMIN: 18512 / ZLMINL   :  3166
SEDTM     :     0 / ERSMAX   :     0 / ERSNOW   :     0
LEDDATA   :     0 / LDIFNOW  : 13066 / LDIFINT  : 12766
HVSHMONI  :   502 / FCLKTM   :     0 / PORIXCREF:     0
PERCF0    :     0 / PERCF1   :     0 / PERLF0   :     0 / PERLF1   :     0
MSINTFNOW:      0
RESULT : OK
```

## ■ Display: For Version A05 or Later



```
Scanner Diagnostic Status
ERRF      :     0 / ERRBRF   :     0 / ERRIRQF  :     0
ERRLF0    :     0 / ERRLF1   :     0 / ERRLF2   :     0
ERRLF3    :     0 / ERRLF4   :     0 / ERRLF5   :     0
ERRCF0    :     0 / ERRCF1   :     0 / ERRCF2   :     0
ERRCF3    :     0 / ERRCF4   :     0 / ERRCF5   :     0
READMF    :     0 / MSINTF   :     0 / VSYNC    :     0
MSTIMEMAX: 24732 / MSMAXL   : 15073 / MSTIMEMIN: 24728 / MSMINL   : 15006
ZLTIMEMAX: 19316 / ZLMAXL   : 15028 / ZLTIMEMIN: 19315 / ZLMINL   : 15001
SEDTM     :     0 / ERSMAX   :     0 / ERSNOW   :     0
LEDDATA   :     0 / LDIFNOW  : 12466 / LDIFINT  : 12100
HVSHMONI  :   496 / FCLKTM   :     0 / PORIXCREF:     0
PERCF0    :     0 / PERCF1   :     0 / PERLF0   :     0 / PERLF1   :     0
MSINTFNOW:      0
SUB-ERROR CODE:000800
RESULT : 12241
```

## [5-12] VIRTUAL IMAGE

Causes image data to be generated.

### ■ Function

#### ● LIGHT:

Inputs the light of the LED on the PMT12A board through the light-collecting guide to output an image.

It can be checked to see whether or not the cause of image abnormality is due to a failure of the scanner optics unit.

#### ● LOG AMP:

Causes the LOG AMP on the PMT board to generate and output image data.

By using “LIGHT” and “SCN12A INPUT” in combination, it can be checked to see whether or not the cause of image abnormality is due to a failure of the light-collecting unit.

#### ● SCN12A INPUT:

Cause the scanner board to generate image data and send the image data to the sub-CPU on the CPU12A board.

It can be checked to see whether or not the cause of image abnormality is due to an image processing error on the CPU board.

### ■ Procedure: Example where “LIGHT” is used to generate image data (For 1-to-1 Connection)

(1) Register the examination menu.

Select the menu on the CL and register it.

(2) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(3) [5][ENT] → [12][ENT] → [1][ENT]

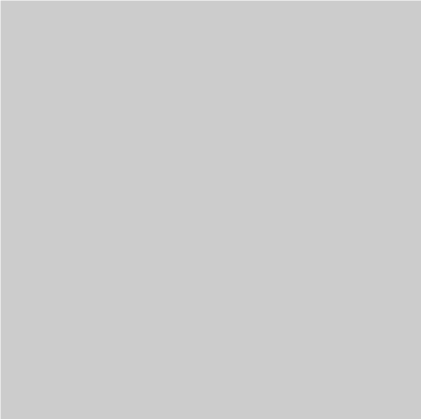
A menu then appears to prompt you to select the LED’s luminescence quantity.

(4) [1][ENT]

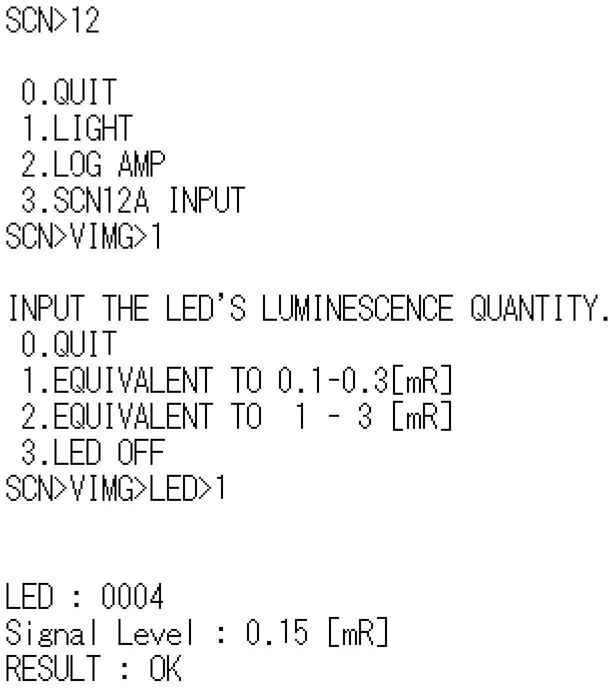
(5) Set the cassette in position.

An image that is similar in cases where an IP exposed at the “Signal Level” dose displayed on screen is read is outputted, and when the process ends normally, the display reads “RESULT: OK”.

Output example: Uniform gray image



### ■ Display: Example where “LIGHT” is used to generate image data (For 1-to-1 Connection)



```
SCN>12

 0.QUIT
 1.LIGHT
 2.LOG AMP
 3.SCN12A INPUT
SCN>VIMG>1

INPUT THE LED'S LUMINESCENCE QUANTITY.
 0.QUIT
 1.EQUIVALENT TO 0.1-0.3[mR]
 2.EQUIVALENT TO  1 - 3 [mR]
 3.LED OFF
SCN>VIMG>LED>1


LED : 0004
Signal Level : 0.15 [mR]
RESULT : OK
```

### ■ Procedure: Example where “LIGHT” is used to generate image data (For N-to-N Connection)

**◆ *NOTE*◆**

*For an N-to-N connection setup, the following error will occur if the command is executed without entering the barcode.*
*→ Error code 11404*

(1) Register the examination menu.

Select the menu on the CL and register it.

(2) Make the RU ready for reading.

Manipulate the CL to make the RU ready for reading (with the cassette loading lamp illuminated).

(3) Using the barcode reader of the CL, enter the barcode.

(4) [5][ENT] → [12][ENT] → [1][ENT]

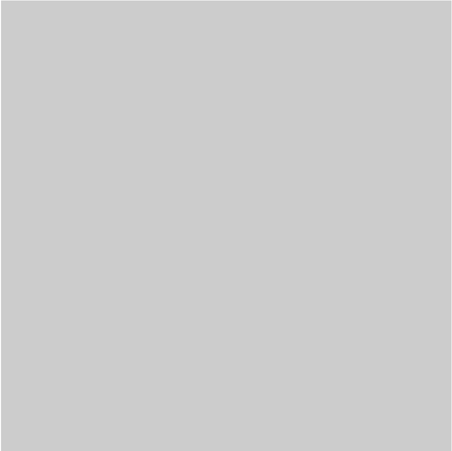
A menu then appears to prompt you to select the LED’s luminescence quantity.

(5) [1][ENT]

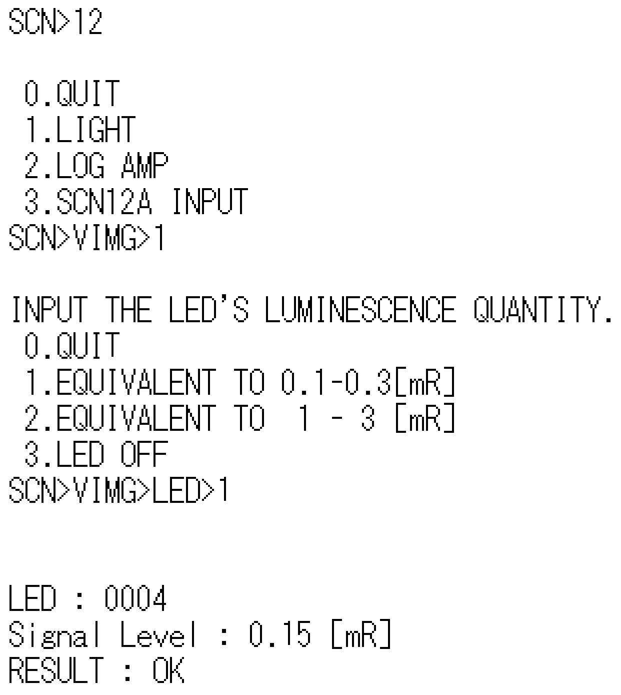
(6) Set the cassette in position.

An image that is similar in cases where an IP exposed at the “Signal Level” dose displayed on screen is read is outputted, and when the process ends normally, the display reads “RESULT: OK”.

Output example: Uniform gray image



## ■ Display: Example where “LIGHT” is used to generate image data (For N-to-N Connection)



```
SCN>12

 0.QUIT
 1.LIGHT
 2.LOG AMP
 3.SCN12A INPUT
SCN>VIMG>1

INPUT THE LED'S LUMINESCENCE QUANTITY.
 0.QUIT
 1.EQUIVALENT TO 0.1-0.3[mR]
 2.EQUIVALENT TO  1 - 3 [mR]
 3.LED OFF
SCN>VIMG>LED>1


LED : 0004
Signal Level : 0.15 [mR]
RESULT : OK
```

## [5-12-1] LIGHT

Directs the PMT12A board LED light toward the reader and reads the LED light entered from the light-collecting guide to generate an image.

After the light is collected by a photomultiplier, the system performs image processing in the same manner as for a regular read operation.

## [5-12-2] LOG AMP

Causes the logarithmic amplifier on the PMT board to generate image data and send the image data to the scanner board.

The scanner board and subsequent sections perform image processing in the same manner as for a regular read operation.

## [5-12-3] SCN12A INPUT

Causes the scanner board to generate image data and send the image data to the sub-CPU on the CPU12A board.

The sub-CPU and subsequent sections perform image processing in the same manner as for a regular read operation.

# [6] MECHANICAL UTILITY

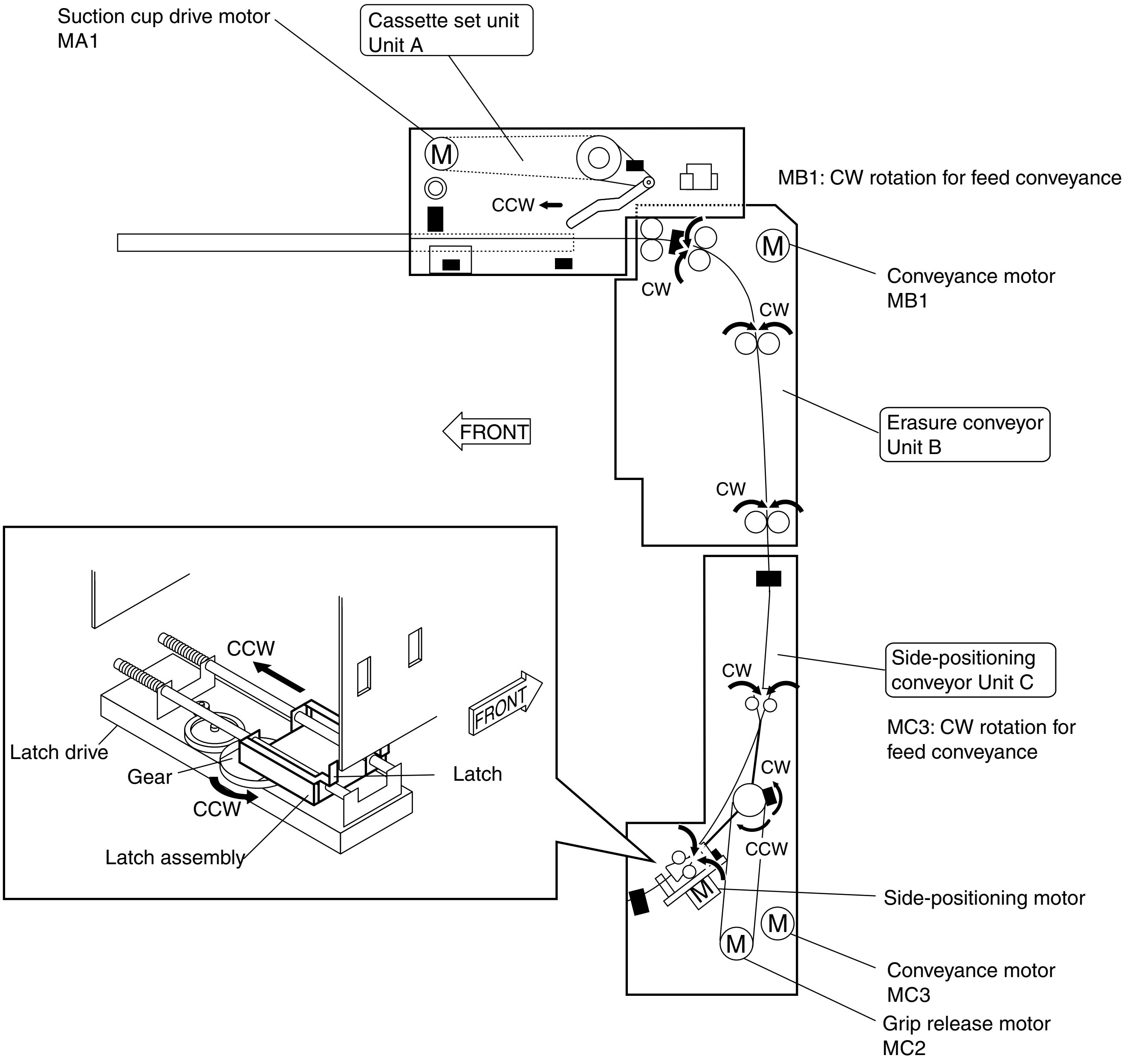
## [6-1] MOTOR

Runs and stops a motor.

You can use the factory default parameter settings (rotation direction, rotation speed, stop mode, etc.) or change such default settings.

The motor names and mounting locations are indicated below:

| | |
|---|---|
| MA1 | Suction cup drive motor |
| MB1 | Conveyance motor |
| MC1 | Side-positioning motor |
| MC2 | Grip release motor |
| MC3 | Conveyance motor |



Suction cup drive motor MA1
Cassette set unit Unit A
M
CCW
MB1: CW rotation for feed conveyance
CW
M
Conveyance motor MB1
CW
Erasure conveyor Unit B
FRONT
CW
CCW
FRONT
Latch drive
Gear
CCW
Latch
Latch assembly
CW
Side-positioning conveyor Unit C
MC3: CW rotation for feed conveyance
CW
CCW
M
Side-positioning motor
M
M
Conveyance motor MC3
Grip release motor MC2

FR6H3057.EPS

## [6-1-1] Parameter setup (For version A02 through A04)

Sets the ten motor drive parameters.

| Menu item | | Setup item |
|---|---|---|
| [1] | ROTATION DIRECTION | Direction of rotation (CW or CCW) |
| [2] | TOTAL NUMBER OF PULSES | Total pulse count |
| [3] | HI-SPEED | High-speed value |
| [4] | LOW-SPEED | Low-speed value |
| [5] | SLEW UP TIME | Rise time |
| [6] | SLEW DOWN TIME | Fall time |
| [7] | POWER-DOWN DELAY TIME | Power-down delay time |
| [8] | MAGNETIC PHASE | Phase excitation type |
| [9] | MOVE AND MODE | Operation/stop mode |
| [10] | STOP MODE | Stop mode |

### ◇ *REFERENCES* ◇

- *The motor drive parameters can be variously set for all motors. The entered settings remain effective while the power is ON.*
- *When you choose "[6-1-2] DRIVE", the system drives a motor in accordance with the parameter settings.*
- *The parameters can be restored to the factory default settings by turning OFF the power or executing "[6-1-4] LOAD PARAMETER FROM FTP-SERV.".*

## ■ Procedure

(1) [6] [ENT] → [1] [ENT] → [1] [ENT]

The display then prompts for the selection of a motor.

(2) Choose “1’” (MA1).

The display then prompts for the selection of a parameter.

(3) Choose “1’” (rotation direction).

The display then prompts for the input of a rotation direction.

(4) Choose “1” (CW).

The display then reads “RESULT: OK”, and the parameter that has been set becomes effective.

(5) [0] [ENT]

## ■ Display

```
|   MU>MTR>1 ............................................. (1)  |
|                                                                |
|   INPUT THE NUMBER OF MOTOR.                                   |
|   0.QUIT 1.MA1 2.MB1 3.MC1 4.MC2 5.MC3                         |
|    INPUT(0 - 5):1 ...................................... (2)  |
|                                                                |
|   1.ROTATION DIRECTION                                         |
|   2.TOTAL NUMBER OF PULSES                                     |
|   3.HI-SPEED                                                   |
|   4.LOW-SPEED                                                  |
|   5.SLEW UP TIME                                               |
|   6.SLEW DOWN TIME                                             |
|   7.POWER-DOWN DELAY TIME                                      |
|   8.MAGNETIC PHASE                                             |
|   9.MOVE AND MODE                                              |
|   10.STOP MODE                                                 |
|   >MCN>MTR>PRM>MTR>PRM>1 ............................... (3)  |
|                                                                |
|   INPUT THE ROTATION DIRECTION.                                |
|   1.CW                                                         |
|   2.CCW                                                        |
|   INPUT(1 - 2):1 ...................................... (4)  |
|   RESULT : OK                                                  |
```

## [6-1-1] Motor drive and stop (For A05 or later)

Drives and stops a motor.

### ■ Procedure

(1) [6] [ENT] → [1] [ENT] → [1] [ENT]

The display then prompts for the selection of a motor.

(2) Choose “1’” (MA1).

(3) Choose “1’” (DRIVE).

Motor drives.

(4) [2] [ENT]

Motor stops.

(5) [0] [ENT]

### ■ Display

```
MU>MTR>1 ........................................ (1)

INPUT THE NUMBER OF DRIVE MOTOR.
0.QUIT 1.MA1 2.MB1 3.MC1 4.MC2 5.MC3
INPUT(0 - 5):1 .................................. (2)
0.QUIT
1.DRIVE
2.STOP
INPUT(0 - 2):1 .................................. (3)
0.QUIT
1.DRIVE
2.STOP
INPUT(0 - 2):1 .................................. (4)
RESULT : OK
```

## [6-1-2] Motor drive (for version A02 through A04)

Drives a motor.

***◇ REFERENCES ◇***

- *The system drives a motor in accordance with the parameters, if they are set as described under "[6-1-1] Parameter setup", or in accordance with the factory default parameters, if they are not set. The parameters that have been set remain effective until the system is powered OFF or reset.*
- *If you want to forcefully stop the motor during its driving, select "[6-1-3] STOP".*

### ■ Procedure

(1) [6] [ENT] → [1] [ENT] → [2] [ENT]

The display then prompts for the selection of a motor.

(2) Choose "1'" (MA1).

When the motor drives and stops in accordance with the parameters, the display reads "RESULT: OK".

If you want to forcefully stop the motor as in cases where the motor is driving for a long time with any of the parameters changed, enter "[3][ENT]".

(3) [3] [ENT]

The motor then comes to a stop.

### ■ Display

```
|   MU>MTR>2 ......................................... (1) |
|                                                          |
|   INPUT THE NUMBER OF DRIVE MOTOR.                       |
|   0.QUIT 1.MA1 2.MB1 3.MC1 4.MC2 5.MC3                   |
|   INPUT(0 - 5):1 ..................................... (2) |
|   RESULT : OK                                            |
```

## [6-1-2] Parameter setup (for version A05)

☞ "[6-1-1] Parameter setup (for versions A02 through A04)"

## [6-1-3] Motor stop (for version A02 through A04)

Stops a motor.

### ■ Procedure: Example where the rotating motor (MA1) is to be stopped

(1) [3] [ENT]

The display then prompts for the selection of a motor.

(2) Choose “1”” (MA1).

The motor then comes to a stop and the display reads “RESULT: OK”.

### ■ Display

```
INPUT THE NUMBER OF DRIVE MOTOR.
0.QUIT 1.MA1 2.MB1 3.MC1 4.MC2 5.MC3
INPUT(0 - 5):1
RESULT : OK

0.QUIT
1.PARAMETER
2.DRIVE
3.STOP
4.LOAD PARAMETER FROM FTP-SERV
MU>MTR>3        ...................................... (1)

INPUT THE NUMBER OF DRIVE MOTOR.
0.QUIT 1.MA1 2.MB1 3.MC1 4.MC2 5.MC3 6.ALL
INPUT(0 - 6):1  ...................................... (2)

RESULT : OK
```

## [6-1-3] Parameter initialization (for version A05)

☞ “[6-1-4] Parameter initialization (for versions A02 through A04)”

## [6-1-4] Parameter initialization (for version A02 through A04)

Restores the parameters to the factory default settings.

**◇ *REFERENCE* ◇**

*The parameters can also be initialized by turning OFF the power.*

### ■ Procedure

(1) [6] [ENT] → [1] [ENT] → [4] [ENT]

A prompt then appears on the display, asking whether you want to download the factory default settings for the parameters.

(2) Choose “1’” (YES).

The system then downloads the default parameter settings and the display reads “RESULT: OK”.

### ■ Display

```
|MU>MTR>4 ........................................ (1)  |
|                                                       |
|ARE YOU SURE DOWN-LOAD THE MOTOR CONTROL PARAMETER?    |
|1.YES 2.NO(DEFFAULT=2):1 ......................... (2) |
|                                                       |
|RESULT : OK                                            |
```

## [6-2] ACTUATOR

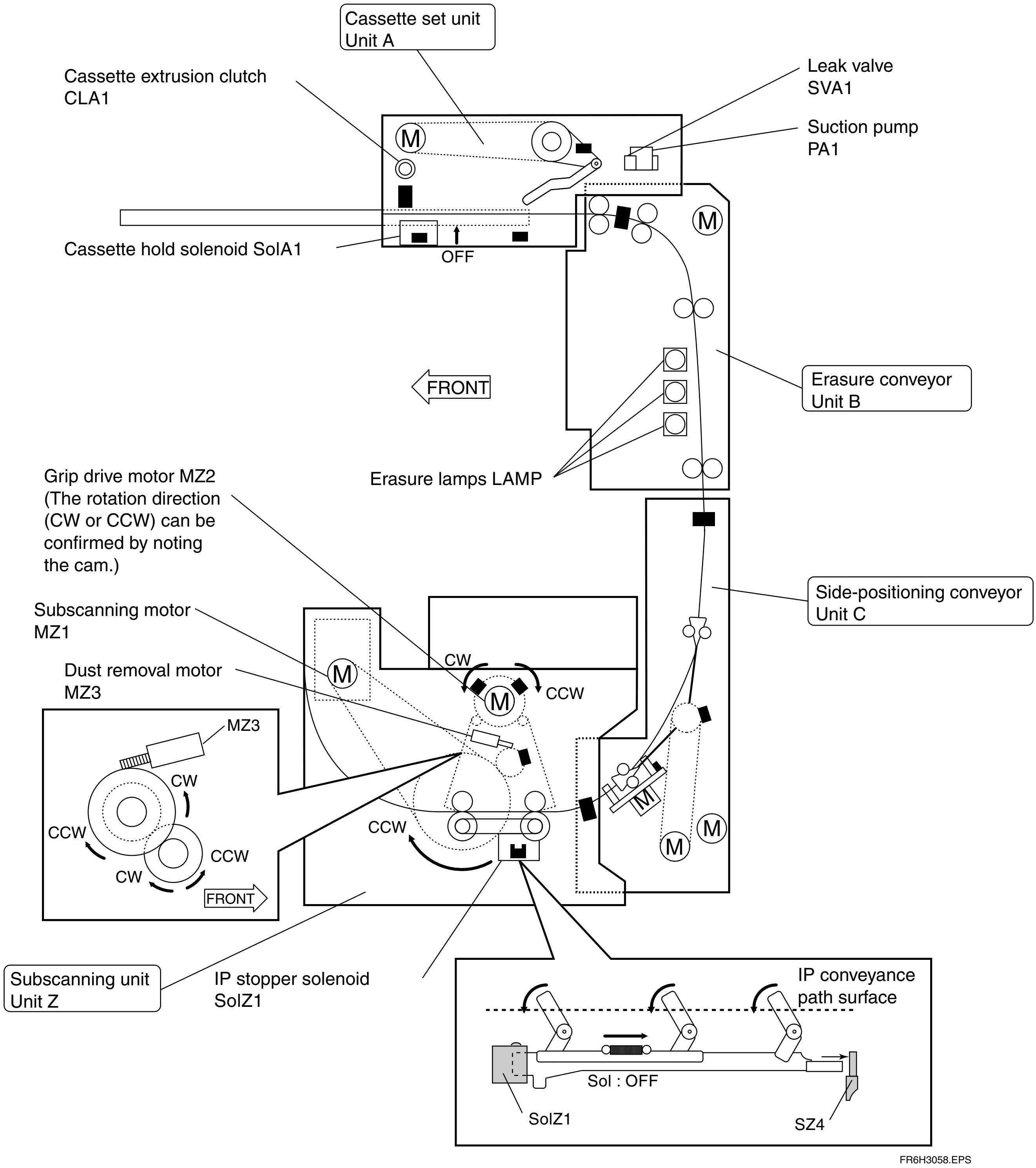
Drives and stops solenoids, pump, clutch, erasure lamps, and subscanning unit motors on an individual basis.

The names and operating states of the actuators are shown below:

| | Name | DRIVE | STOP |
|---|---|---|---|
| CLA1 | Cassette extrusion clutch | Clutch ON | Clutch OFF |
| SVA1 | Leak valve | IP suction released | Stopped |
| SOLZ1 | IP stopper solenoid | Stopper protruding | Stopper retracted |
| SOLA1 | Cassette hold solenoid | Cassette released | Cassette held |
| PA1 | Suction pump | IP vacuum-retained | Stopped |
| LAMP | Erasure lamps | Lamps illuminated | Lamps extinguished |
| FAN | Erasure unit cooling fan (FAN3) | Driven | Stopped |
| MZ1 | Subscanning motor | Driven | Stopped |
| MZ2 | Grip drive motor | Driven | Stopped |
| MZ3 | Dust removal motor | Driven | Stopped |

FR6H3072.EPS

The actuator mounting locations are shown below:


Cassette set unit
Unit A
Cassette extrusion clutch
CLA1
Leak valve
SVA1
Suction pump
PA1
Cassette hold solenoid SolA1
OFF
M
FRONT
Erasure conveyor
Unit B
Erasure lamps LAMP
Grip drive motor MZ2
(The rotation direction
(CW or CCW) can be
confirmed by noting
the cam.)
Subscanning motor
MZ1
Dust removal motor
MZ3
MZ3
CW
CCW
CCW
CW
FRONT
CW
CCW
CCW
Side-positioning conveyor
Unit C
Subscanning unit
Unit Z
IP stopper solenoid
SolZ1
IP conveyance
path surface
Sol : OFF
SolZ1
SZ4
FR6H3058.EPS

## [6-2-1] Actuator drive

Drives an actuator.

### ■ Procedure: Example where the cassette extrusion clutch (CLA1) is to be driven

(1) [6] [ENT] → [2] [ENT] → [1] [ENT]

The display then prompts for the selection of an actuator.

(2) Choose “1”” (CLA1).

The system then drives the selected actuator and the display reads “RESULT: OK”.

(3) [2] [ENT]

After a little while, the selected actuator comes to a stop.

**◆ *INSTRUCTIONS* ◆**

- *Be sure to execute “STOP” before executing “DRIVE”.*
- *The actuator will not operate even if you execute “DRIVE” in succession after executing “DRIVE”.*
- *Be sure to execute “STOP” after executing “DRIVE”.*

**◇ *REFERENCE* ◇**

*The erasure lamp automatically turns OFF 20 seconds after driving.*

### ■ Display

```
MU>ACT>4 ........................................ (1)

INPUT THE NUMBER OF ACTUATOR.
0.QUIT 1.CLA1 2.SVA1
3.SOLZ1 4.SOLA1 5.PA1 6.LAMP
7.MZ3 8.MZ2 9.MZ1(FFM) 10.FAN 11.ALL
INPUT(0 - 10) ................................... (2)

RESULT : OK
```

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## [6-3] SENSOR

Monitors a sensor and displays its status (open or closed).

You can monitor a specific sensor individually or all sensors simultaneously.

The names and OPEN/CLOSE states of the sensors are indicated below:

| | Name | On-screen indication: CLOSE | On-screen indication: OPEN |
|---|---|---|---|
| SA1 | Cassette ejection sensor | The shutter is closed. | The shutter is open. |
| SA2 | Cassette IN sensor | The cassette is set in position. | The cassette is not set in position. |
| SA3 | Hold sensor | The cassette is unlocked. | The cassette is locked. |
| SA4 | Suction cup HP sensor | The home position is reached. | The home position is not reached. |
| SA5 | Suction sensor | No IP is vacuum-retained. | An IP is vacuum-retained. |
| SB1 | IP sensor | An IP is present. | No IP is present. |
| SC1 | Side-positioning HP sensor | The home position is reached. | The home position is not reached. |
| SC2 | Grip release HP sensor | The home position is reached. | The home position is not reached. |
| SC3 | IP sensor | An IP is present. | No IP is present. |
| SC4 | IP sensor | An IP is present. | No IP is present. |
| SZ2 | Driving-side grip release HP sensor | The grip is released. | The grip is activated. |
| SZ3 | Driven-side grip release HP sensor | The grip is activated. | The grip is released. |
| SZ4 | IP stopper HP sensor | The home position is reached. | The home position is not reached. |
| SZ5 | Dust removal sensor | The dust remover is operating. | The dust remover is stopped. |
| LDSN 1-3 | Lamp illumination failure sensors | The lamps are illuminated. | The lamps are extinguished. |

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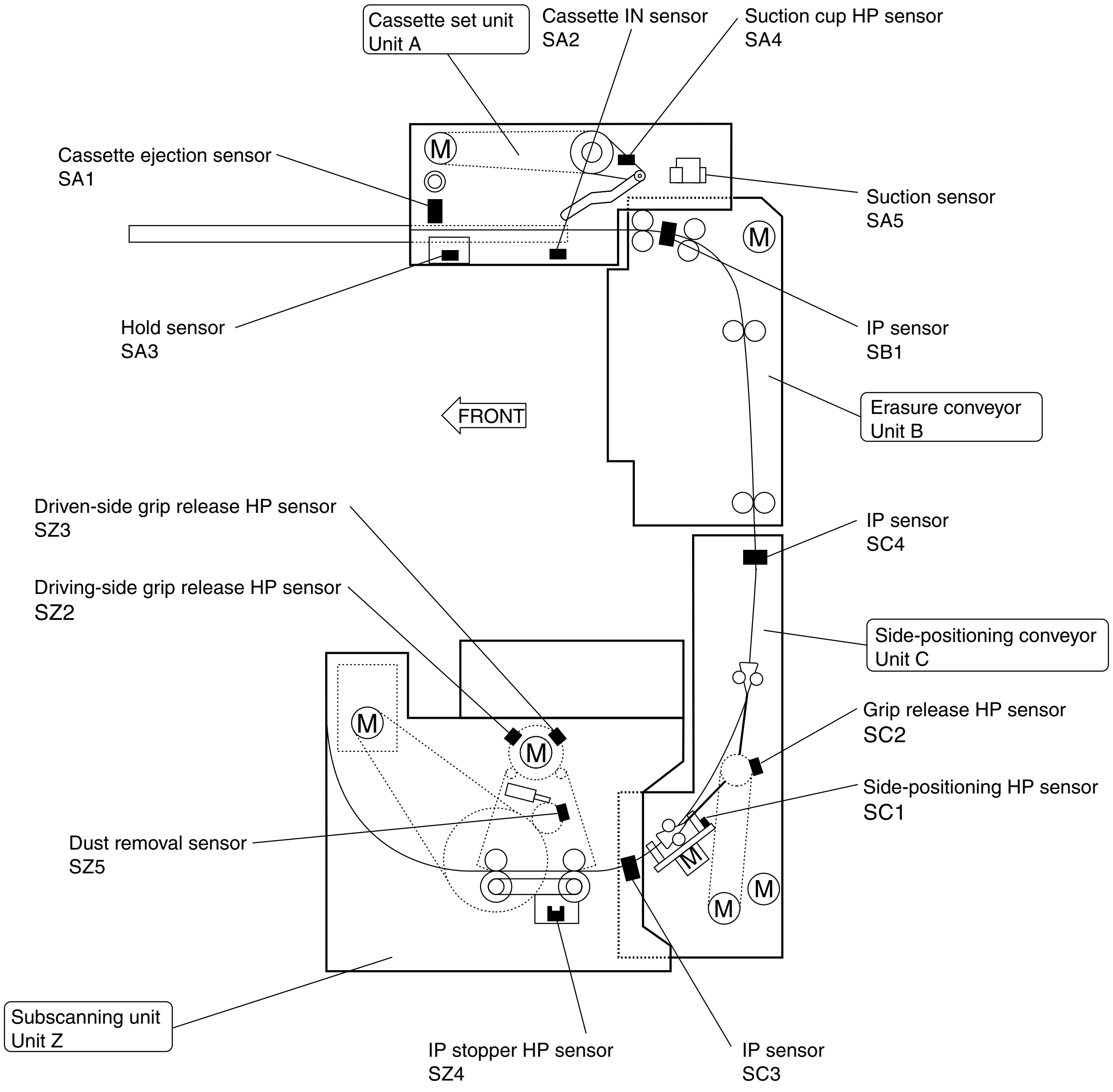
The sensor mounting locations are shown below:


Cassette set unit
Unit A
Cassette IN sensor
SA2
Suction cup HP sensor
SA4
Cassette ejection sensor
SA1
Suction sensor
SA5
Hold sensor
SA3
IP sensor
SB1
FRONT
Erasure conveyor
Unit B
Driven-side grip release HP sensor
SZ3
IP sensor
SC4
Driving-side grip release HP sensor
SZ2
Side-positioning conveyor
Unit C
Grip release HP sensor
SC2
Side-positioning HP sensor
SC1
Dust removal sensor
SZ5
M
Subscanning unit
Unit Z
IP stopper HP sensor
SZ4
IP sensor
SC3

LDSN1-LDSN3: Lamp illumination failure circuitry
(mounted on the INV12A board)

FR6H3059.EPS

## [6-3-1] Individual sensor monitoring

Monitors a specified sensor on an individual basis.

### ■ Procedure: Example where the cassette ejection sensor (SA1) is to be monitored

(1) [6] [ENT] → [3] [ENT] → [1] [ENT]

The display then prompts for the selection of a sensor.

(2) Choose “1”” (SA1).

The system then indicates the status of the selected sensor (SA1) and displays the message “RESULT: OK”.

### ■ Display

```
MU>SNS>1 ............................................. (1)

INPUT THE NUMBER OF SENSOR.
0.QUIT 1.SA1 2.SA2 3.SA3 4.SA4 5.SA5
6.SB1 7.SC1 8.SC2 9.SC3
10.SC4 11.SZ2
12.SZ3 13.SZ4
14.SZ5 15.LDSN1 16.LDSN2 17.LDSN3
INPUT(0 - 17):1 ...................................... (2)

Open
RESULT : OK
```

## [6-3-2] Overall sensor monitoring

Monitors all the sensors simultaneously.

**◇ *REFERENCE* ◇**

*This menu item monitors the sensor status that prevails when the monitoring command is issued. To monitor sensor state transitions in real time, execute "[6-3-3] REAL-TIME MONITOR ALL".*

### ■ Procedure

(1) [6] [ENT] → [3] [ENT] → [2] [ENT]

The system then presents the status information about all sensors and displays the message "RESULT: OK".

### ■ Display

```
MU>SNS>2 ........................................ (1)
Open:o/Close:x
-----------------
SSSSSSSSSSSSSSLLL
AAAAABCCCCZZZZDDD
12345112342345SSS
              NNN
              123
-----------------
ooxoxoxxooxoxooo

RESULT : OK
```

## [6-3-3] REAL-TIME MONITOR ALL

Monitors the state transitions of all sensors in real time.

The on-screen indication changes when the monitored sensor status changes or when the sensor light path is intentionally blocked.

### ◇ *REFERENCES* ◇

- *A regular reading operation is not performed even when a cassette is inserted after the monitoring is initiated.*
- *If you want to convey the IP while monitoring the sensor, execute "[3-1-4] MONITOR READING & ERASURE".*

### ■ Procedure: Example where the cassette IN sensor (SA2) is to be monitored

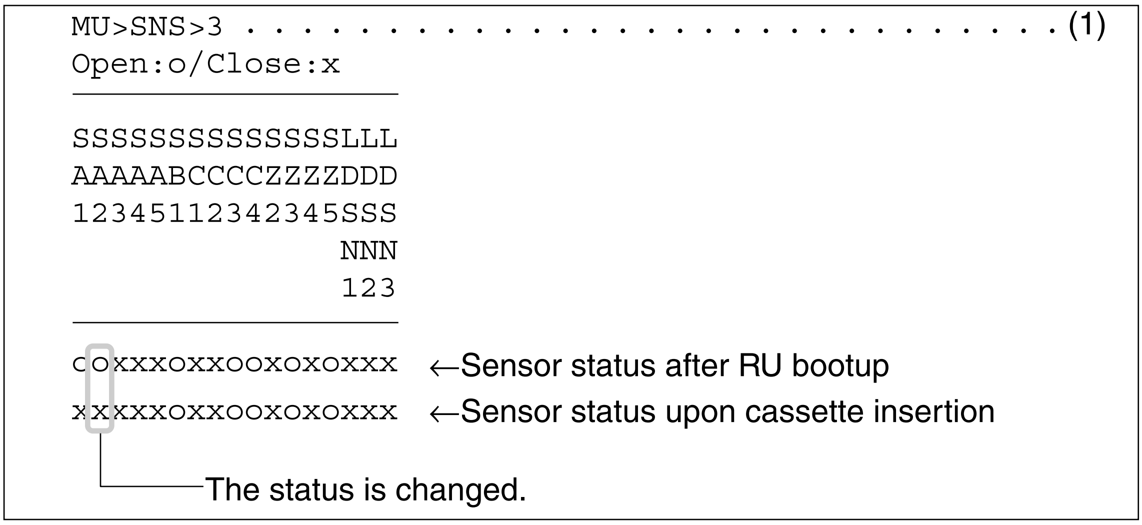
(1) [6] [ENT] → [3] [ENT] → [3] [ENT]

The display then presents the status information about all sensors.

(2) [Ctrl]+[c]+[ENT]

The monitoring ends.

### ■ Display



```
MU>SNS>3 . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(1)
Open:o/Close:x
_________________

SSSSSSSSSSSSSSLLL
AAAAABCCCCZZZZDDD
12345112342345SSS
              NNN
              123
_________________

ooxxxoxxooxoxoxxx  ←Sensor status after RU bootup
xxxxxoxxooxoxoxxx  ←Sensor status upon cassette insertion
```

The status is changed.

FR6H3078.EPS

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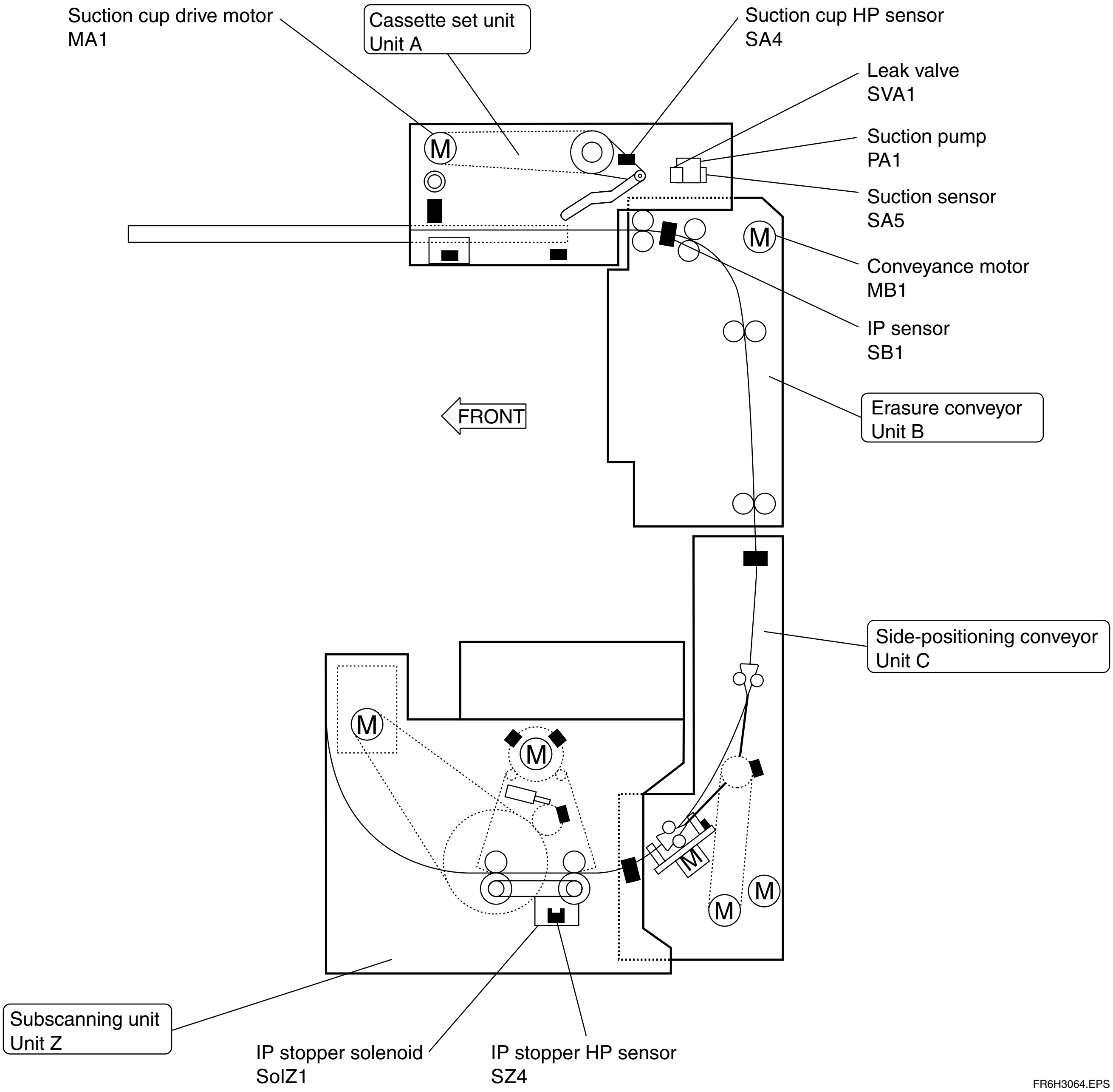
## [6-4] UNIT

Runs operational checkout on the following units:

- Cassette set unit: IP feed/load operation
- Side-positioning conveyor: Side-positioning and side-positioning grip operation
- Subscanning unit: Subscanning grip operation, subscanning read operation, and IP conveyance operation

The associated unit locations and operating I/Os are shown below:


Suction cup drive motor
MA1
Cassette set unit
Unit A
Suction cup HP sensor
SA4
Leak valve
SVA1
Suction pump
PA1
Suction sensor
SA5
Conveyance motor
MB1
IP sensor
SB1
Erasure conveyor
Unit B
FRONT
Side-positioning conveyor
Unit C
M
Subscanning unit
Unit Z
IP stopper solenoid
SolZ1
IP stopper HP sensor
SZ4
FR6H3064.EPS

## [6-4-1] IP feed/load operation checkout

Performs an IP feed operation, IP load operation, and MA1/MB2 home-positioning operation for operational checkout purposes.

### ■ Procedure: Example where IP feed operation is to be checked

(1) Set a cassette in position.

(2) [6] [ENT] → [4] [ENT] → [1] [ENT] → [2] [ENT]

After a little while, the IP feed operation is executed, and the display reads “RESULT: OK”.

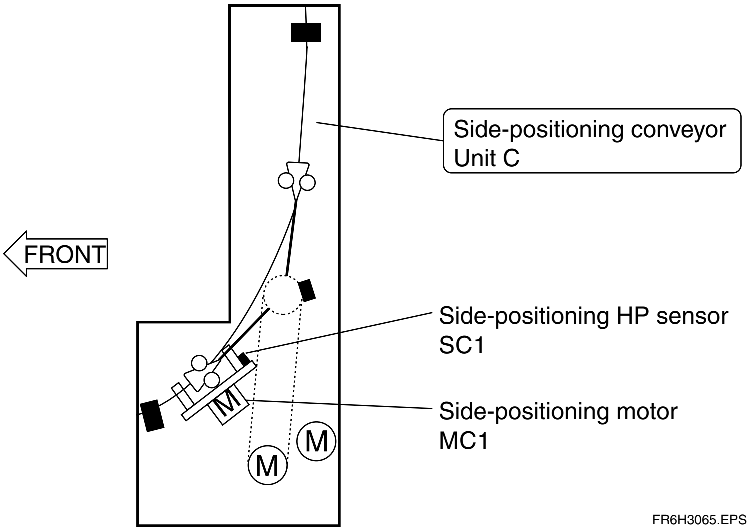
### ■ Display

```
| MU>UNIT>IFL>2 ...................................... (2) |
| COMMAND IS IN PROGRESS                                    |
| INTERRUPTION : HIT[^C] + ENT KEY.                         |
| RESULT : OK                                               |
```

## [6-4-2] Side-positioning grip operation checkout

Returns the side-positioning conveyor grip mechanism to its HP.

The associated unit location and operating I/Os are shown below:


FRONT
Side-positioning conveyor
Unit C
Side-positioning HP sensor
SC1
Side-positioning motor
MC1
M
M
M
FR6H3065.EPS

### ■ Procedure

(1) [6] [ENT] → [4] [ENT] → [2] [ENT] → [1] [ENT]

The system then returns the side-positioning conveyor grip mechanism to its HP and the display reads “RESULT: OK”.

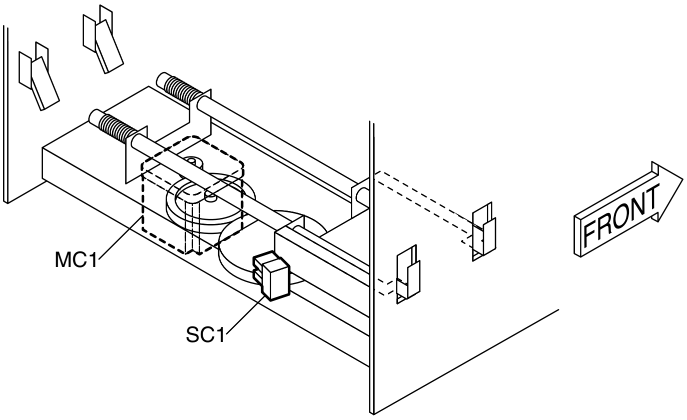
### ■ Display

```
|   MU>UNIT>SPG>1 ................................... (1)  |
|                                                          |
|   COMMAND IS IN PROGRESS                                 |
|   RESULT : OK                                            |
```

## [6-4-3] Side-positioning operation checkout

Returns the side-positioning mechanism of the side-positioning conveyor to the HP.

The associated unit location and operating I/Os are shown below:



FR6H3074.EPS

## ■ Procedure

(1) [6] ENT] → [4] [ENT] → [3] [ENT] → [1] [ENT]

The system then returns the side-positioning mechanism of the side-positioning conveyor to the HP and the display reads “RESULT: OK”.

## ■ Display

```
|   MU>UNIT>SPU>1 ...................................... (1)  |
|                                                             |
|   COMMAND IS IN PROGRESS                                    |
|   RESULT : OK                                               |
```

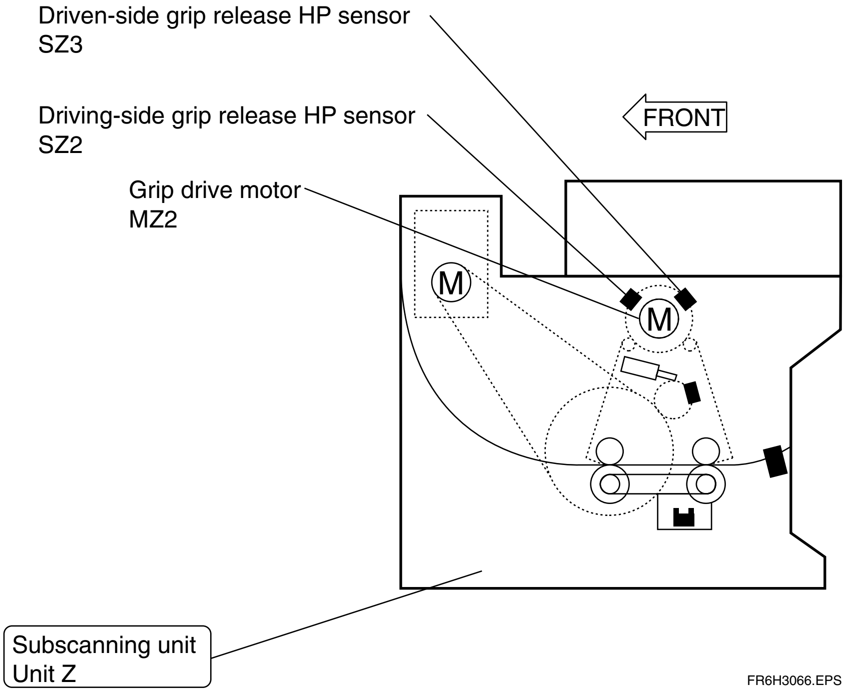
## [6-4-4] Subscanning grip operation checkout

**CAUTION**

*With software version A02 or earlier, this feature is not implemented, so it should not be used.*

Returns the grip mechanism of the subscanning unit to the HP.

The associated unit location and operating I/Os are shown below:


Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
FRONT
Grip drive motor
MZ2
M
M
Subscanning unit
Unit Z
FR6H3066.EPS

### ■ Procedure

(1) [6] [ENT] → [4] [ENT] → [4] [ENT] → [1] [ENT]

The system then returns the grip mechanism of the subscanning unit to the HP and the display reads “RESULT: OK”.

### ■ Display

```
MU>UNIT>SRG>1 .................................... (1)

COMMAND IS IN PROGRESS
RESULT : OK
```

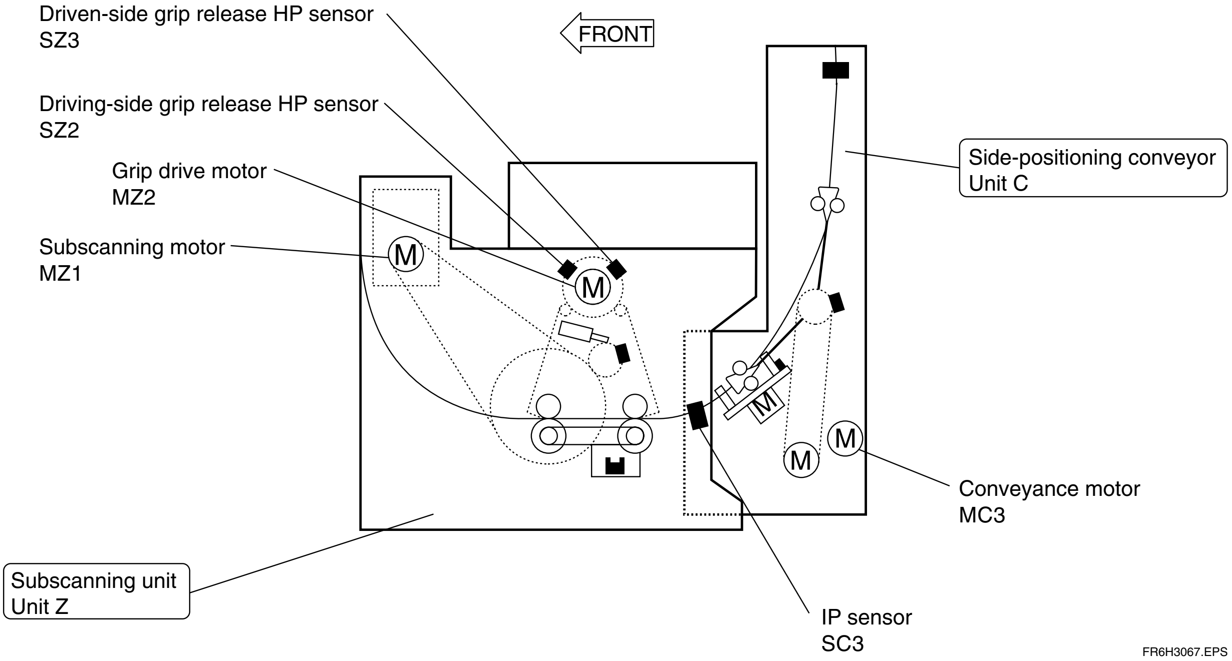
## [6-4-5] Subscanning read operation checkout

**CAUTION**

*With software version A04 or earlier, this feature is not implemented, so it should not be used. If it is used, an error results, with error code “13011” displayed.*

Causes the subscanning unit to perform a read operation.

The associated unit locations and operating I/Os are shown below:


Driven-side grip release HP sensor
SZ3
Driving-side grip release HP sensor
SZ2
Grip drive motor
MZ2
Subscanning motor
MZ1
FRONT
Side-positioning conveyor
Unit C
M
M
M
M
M
Conveyance motor
MC3
Subscanning unit
Unit Z
IP sensor
SC3
FR6H3067.EPS

### ■ Procedure

(1) [6] ENT] → [4] [ENT] → [5] [ENT]

The subscanning unit then performs a read operation and the display reads “RESULT: OK”.

### ■ Display

```
|MU>UNIT>SRD>1 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (1)  |
|                                                                                           |
|COMMAND IS IN PROGRESS                                                                     |
|RESULT : OK                                                                                |
```

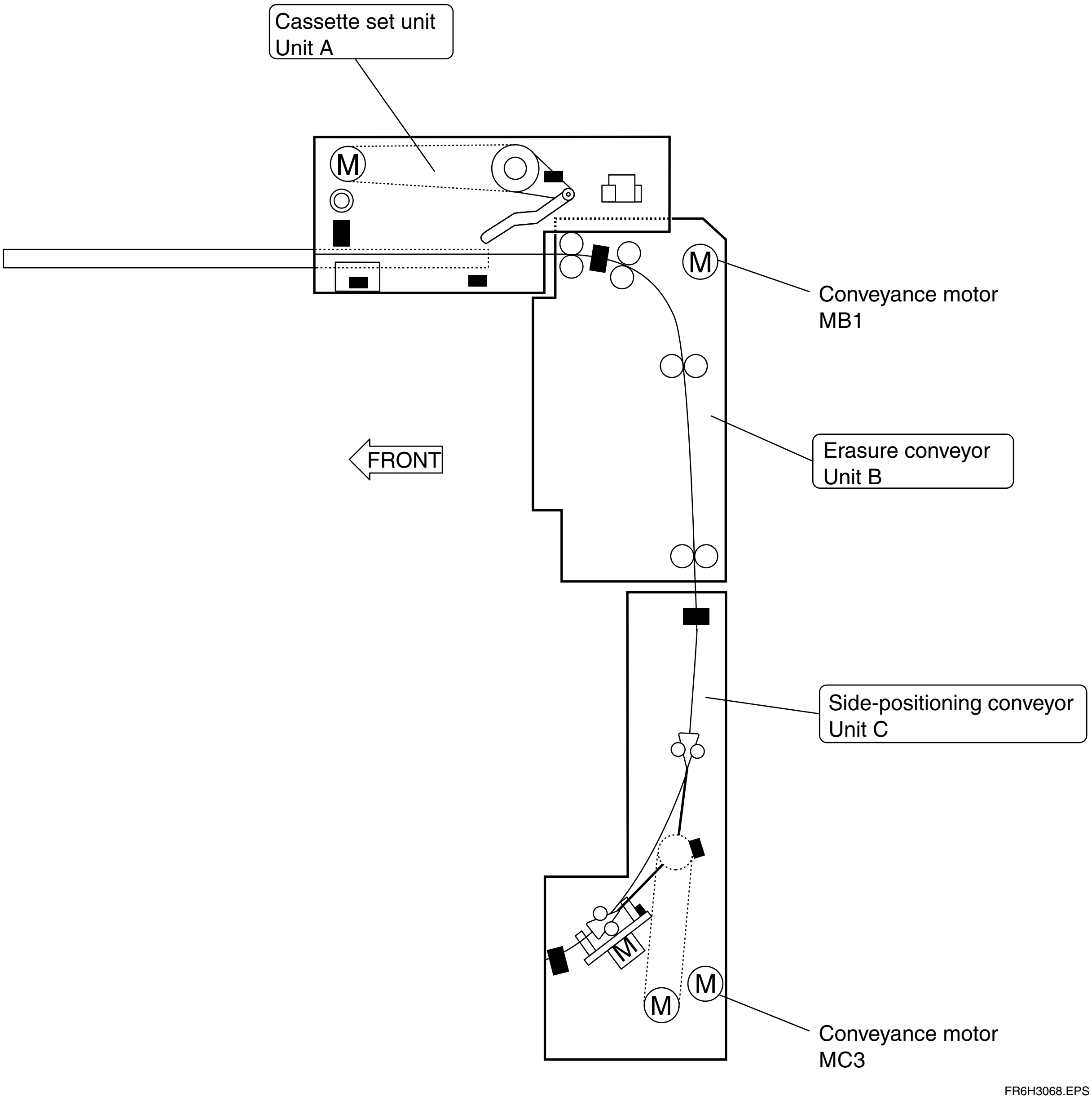
## [6-4-6] IP conveyance operation checkout

**CAUTION**

*With software version A02 or earlier, this feature is not implemented, so it should not be used.*

Causes the erasure conveyor and side-positioning conveyor to perform an IP conveyance operation.

The associated unit locations and operating I/Os are shown below:


Cassette set unit
Unit A
M
Conveyance motor
MB1
FRONT
Erasure conveyor
Unit B
Side-positioning conveyor
Unit C
M
M
M
Conveyance motor
MC3
FR6H3068.EPS

## ■ Procedure: For Version A03 and A04

(1) [6] [ENT] → [4] [ENT] → [6] [ENT]

The display then prompts you to specify the direction of motor rotation.

(2) Choose “1’” (CW).

The erasure conveyor and side-positioning conveyor then perform an IP conveyance operation and the display reads “RESULT: OK”.

## ■ Display: For Version A03 and A04

```
|MU>UNIT>6 ................................................ (1)  |
|                                                                |
|INPUT THE ROTATION DIRECTION.                                   |
|1.CW                                                            |
|2.CCW                                                           |
|INPUT(1 - 2):1 ........................................... (2)  |
|                                                                |
|COMMAND IS IN PROGRESS                                          |
|RESULT : OK                                                     |
```

## ■ Procedure: For Version A05 or Later

(1) [6][ENT] → [4][ENT] → [6][ENT]

The display then prompts you to specify the direction of motor rotation.

(2) Select “1” (FEED).

The display then prompts you to specify the operation (drive or stop).

(3) Select “1” (DRIVE).

The IP conveyance operation is then started.

(4) Select “2” (STOP).

The IP conveyance operation is then stopped.

(5) [0][ENT]

## ■ Display: For Version A05 or Later

```
|MU>UNIT>6 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (1)  |
|                                                                                                  |
|INPUT THE ROTATION DIRECTION.                                                                     |
|0.QUIT                                                                                            |
|1.FEED                                                                                            |
|2.LOAD                                                                                            |
|INPUT(1 - 2):1 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (2)  |
|0.QUIT                                                                                            |
|1.DRIVE                                                                                           |
|2.STOP                                                                                            |
|INPUT(0 - 2):1 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (3)  |
|0.QUIT                                                                                            |
|1.DRIVE                                                                                           |
|2.STOP                                                                                            |
|INPUT(0 - 2):2 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (4)  |
|0.QUIT                                                                                            |
|1.DRIVE                                                                                           |
|2.STOP                                                                                            |
```

## [6-4-7] SCANNER CLEANING (MZ3)

**CAUTION**

*With software version A04 or earlier, this feature is not implemented, so it should not be used.*

Causes the axis of the light-collecting mirror to be rotated, thereby cleaning the light-collecting face of the light-collecting guide.

The function of this menu is the same as the scanner cleaning function in the User Utility.

### ■ Function

- HOME POSITION

  Cleans the light-collecting face of the light-collecting guide by rotating the light-collecting mirror, and performs home-positioning operation.

- LOCK (ref. service manual)

  Rotates the light-collecting mirror to move it to a locked position. Use this function when moving the RU on a bumpy floor by use of the casters.

  If this menu is executed, the RU will not work normally. To reset the locked condition, power OFF the RU and then back ON.

### ■ Procedures for HOME POSITION

(1) [6][ENT] → [4][ENT] → [7][ENT] → [1][HOME POSITION]

Cleaning is then performed.

### ■ Display of HOME POSITION

```
|MU>UNIT>SCH>1 ...................................... (1) |
|                                                         |
|COMMAND IS IN PROGRESS                                   |
|RESULT : OK                                              |
```

## ■ Procedures for LOCK (ref. service manual)

(1) [6][ENT]→[4][ENT]→[7][ENT]→[2][LOCK]

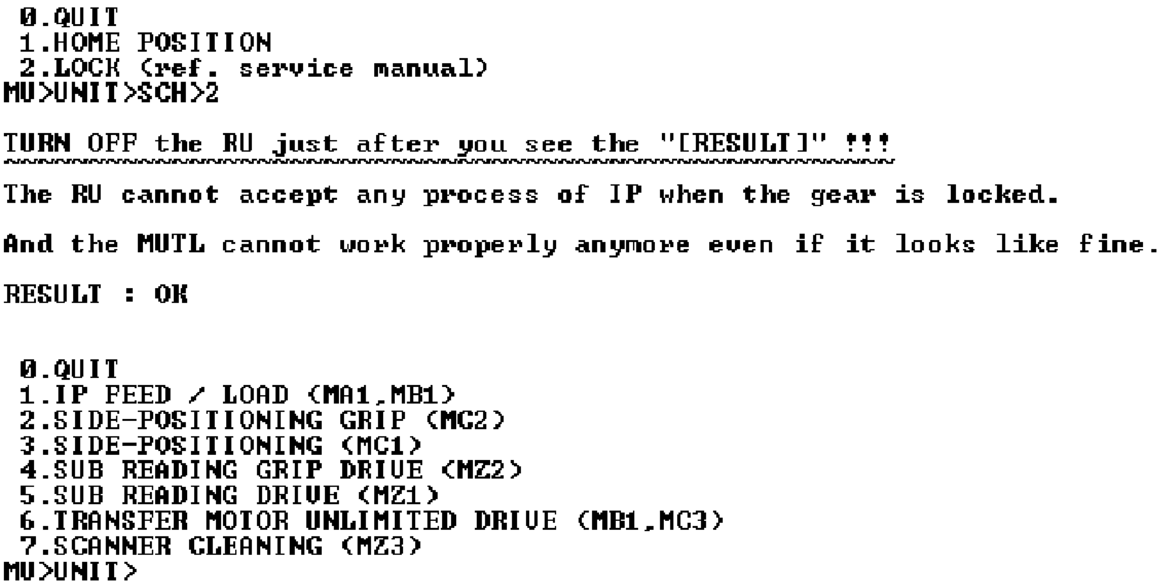
The light-collecting mirror is locked.

(2) Power OFF the RU.

**◆ *NOTE* ◆**

*If "LOCK" is executed, the RU will not work normally. Thus, power OFF the RU immediately.*

## ■ Display of LOCK (ref. service manual)



```
 0.QUIT
 1.HOME POSITION
 2.LOCK (ref. service manual)
MU>UNIT>SCH>2

TURN OFF the RU just after you see the "[RESULT]" !!!

The RU cannot accept any process of IP when the gear is locked.

And the MUTL cannot work properly anymore even if it looks like fine.

RESULT : OK


 0.QUIT
 1.IP FEED / LOAD (MA1,MB1)
 2.SIDE-POSITIONING GRIP (MC2)
 3.SIDE-POSITIONING (MC1)
 4.SUB READING GRIP DRIVE (MZ2)
 5.SUB READING DRIVE (MZ1)
 6.TRANSFER MOTOR UNLIMITED DRIVE (MB1,MC3)
 7.SCANNER CLEANING (MZ3)
MU>UNIT>
```

FR6H3345.EPS

# [7] SOFTWARE UTILITY

Displays configuration information and temporarily changes information required for network connection.

## [7-1] DISPLAY CONFIGURATION

Displays the contents of configuration information in the flash memory on the CPU12A board.

### ■ Function

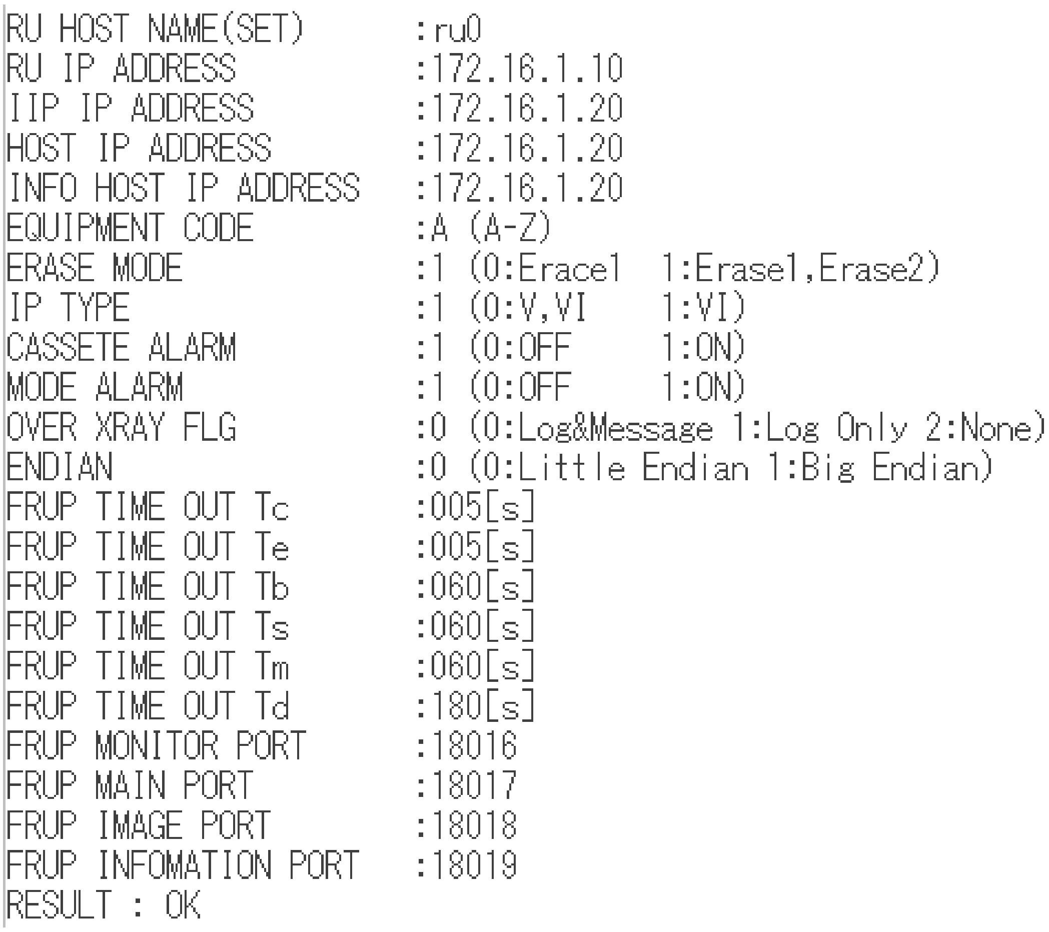
- IRSET.CFG: Displays the setup contents of IRSET.CFG
- IRSTATASUS.CFG: Displays the setup contents of IRSTATASUS.CFG.
- NETMASK: Displays the setup contents of NETMASK.
- ROUTE (GATEWAY): Displays the setup contents of ROUTE (GATEWAY).

### ■ Procedure: Example where “IRSET.CFG” is to be displayed

(1) [7][ENT] → [1][ENT] → [1][ENT]

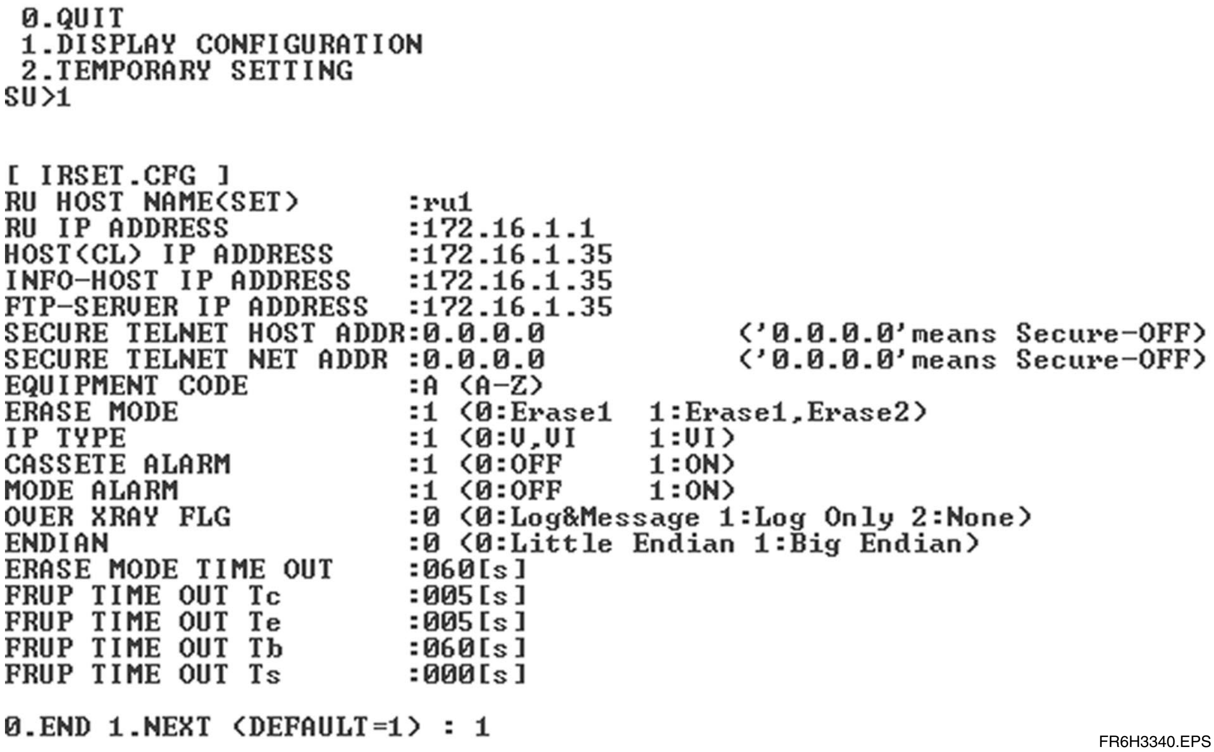
The setup contents of IRSET.CFG are displayed.

### ■ Display: Example of “IRSET.CFG” display (For Version A04 or Earlier)



```
RU HOST NAME(SET)      :ru0
RU IP ADDRESS          :172.16.1.10
IIP IP ADDRESS         :172.16.1.20
HOST IP ADDRESS        :172.16.1.20
INFO HOST IP ADDRESS   :172.16.1.20
EQUIPMENT CODE         :A (A-Z)
ERASE MODE             :1 (0:Erace1  1:Erase1,Erase2)
IP TYPE                :1 (0:V,VI    1:VI)
CASSETE ALARM          :1 (0:OFF     1:ON)
MODE ALARM             :1 (0:OFF     1:ON)
OVER XRAY FLG          :0 (0:Log&Message 1:Log Only 2:None)
ENDIAN                 :0 (0:Little Endian 1:Big Endian)
FRUP TIME OUT Tc       :005[s]
FRUP TIME OUT Te       :005[s]
FRUP TIME OUT Tb       :060[s]
FRUP TIME OUT Ts       :060[s]
FRUP TIME OUT Tm       :060[s]
FRUP TIME OUT Td       :180[s]
FRUP MONITOR PORT      :18016
FRUP MAIN PORT         :18017
FRUP IMAGE PORT        :18018
FRUP INFOMATION PORT   :18019
RESULT : OK
```

## ■ Display: Example of “IRSET.CFG” display (For Version A05 or Later)



```
 0.QUIT
 1.DISPLAY CONFIGURATION
 2.TEMPORARY SETTING
SU>1

[ IRSET.CFG ]
RU HOST NAME(SET)      :ru1
RU IP ADDRESS          :172.16.1.1
HOST(CL) IP ADDRESS    :172.16.1.35
INFO-HOST IP ADDRESS   :172.16.1.35
FTP-SERVER IP ADDRESS  :172.16.1.35
SECURE TELNET HOST ADDR:0.0.0.0           ('0.0.0.0'means Secure-OFF)
SECURE TELNET NET ADDR :0.0.0.0           ('0.0.0.0'means Secure-OFF)
EQUIPMENT CODE         :A (A-Z)
ERASE MODE             :1 (0:Erase1  1:Erase1,Erase2)
IP TYPE                :1 (0:V,VI    1:VI)
CASSETE ALARM          :1 (0:OFF     1:ON)
MODE ALARM             :1 (0:OFF     1:ON)
OVER XRAY FLG          :0 (0:Log&Message 1:Log Only 2:None)
ENDIAN                 :0 (0:Little Endian 1:Big Endian)
ERASE MODE TIME OUT    :060[s]
FRUP TIME OUT Tc       :005[s]
FRUP TIME OUT Te       :005[s]
FRUP TIME OUT Tb       :060[s]
FRUP TIME OUT Ts       :000[s]

0.END 1.NEXT (DEFAULT=1) : 1
```

FR6H3340.EPS

## [7-2] TEMPORARY SETTING

Sets information required for network connection with the CL and FTP. By restarting the RU, the setup contents temporarily become effective.

**CAUTION**

*When you change the IP address, connection between the RU and CL will not be established unless the CL has the same IP address as that of the RU.*

### ■ Function

- ● READER UNIT NAME: Temporarily changes the unit name of the RU.
- ● READER UNIT IP ADDR: Temporarily changes the IP address of the RU.
- ● HOST (CL): Temporarily changes the IP address of the CL.
- ● INFO-HOST IP ADDR: Temporarily changes the IP address of the host.
- ● FTP-SERV IP ADDRESS: Temporarily changes the IP address of the FTP server.
- ● NETMASK: Temporarily changes the net mask.
- ● ROUTE (GATEWAY): Temporarily changes the IP address of the gateway.

### ■ Procedure: Example where the unit name of the RU is to be temporarily changed (for version A04 or earlier)

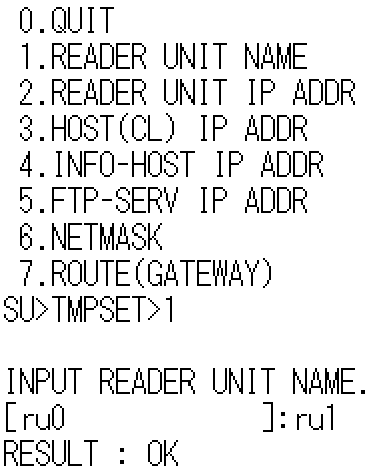
(1) [7][ENT] → [2][ENT] → [1][ENT]

The display prompts for the input of a unit name of the RU.

(2) Enter a new unit name (for example, “ru1”).

The unit name of the RU is temporarily changed.

### ■ Display: Example where the unit name of the RU is temporarily changed (for version A04 or earlier)



```
 0.QUIT
 1.READER UNIT NAME
 2.READER UNIT IP ADDR
 3.HOST(CL) IP ADDR
 4.INFO-HOST IP ADDR
 5.FTP-SERV IP ADDR
 6.NETMASK
 7.ROUTE(GATEWAY)
SU>TMPSET>1

INPUT READER UNIT NAME.
[ru0            ]:ru1
RESULT : OK
```

## ■ Procedure: Example where the unit name of the RU is to be temporarily changed (for version A05 or later)

(1) [7][ENT] → [2][ENT]

The setup content for each item is displayed.

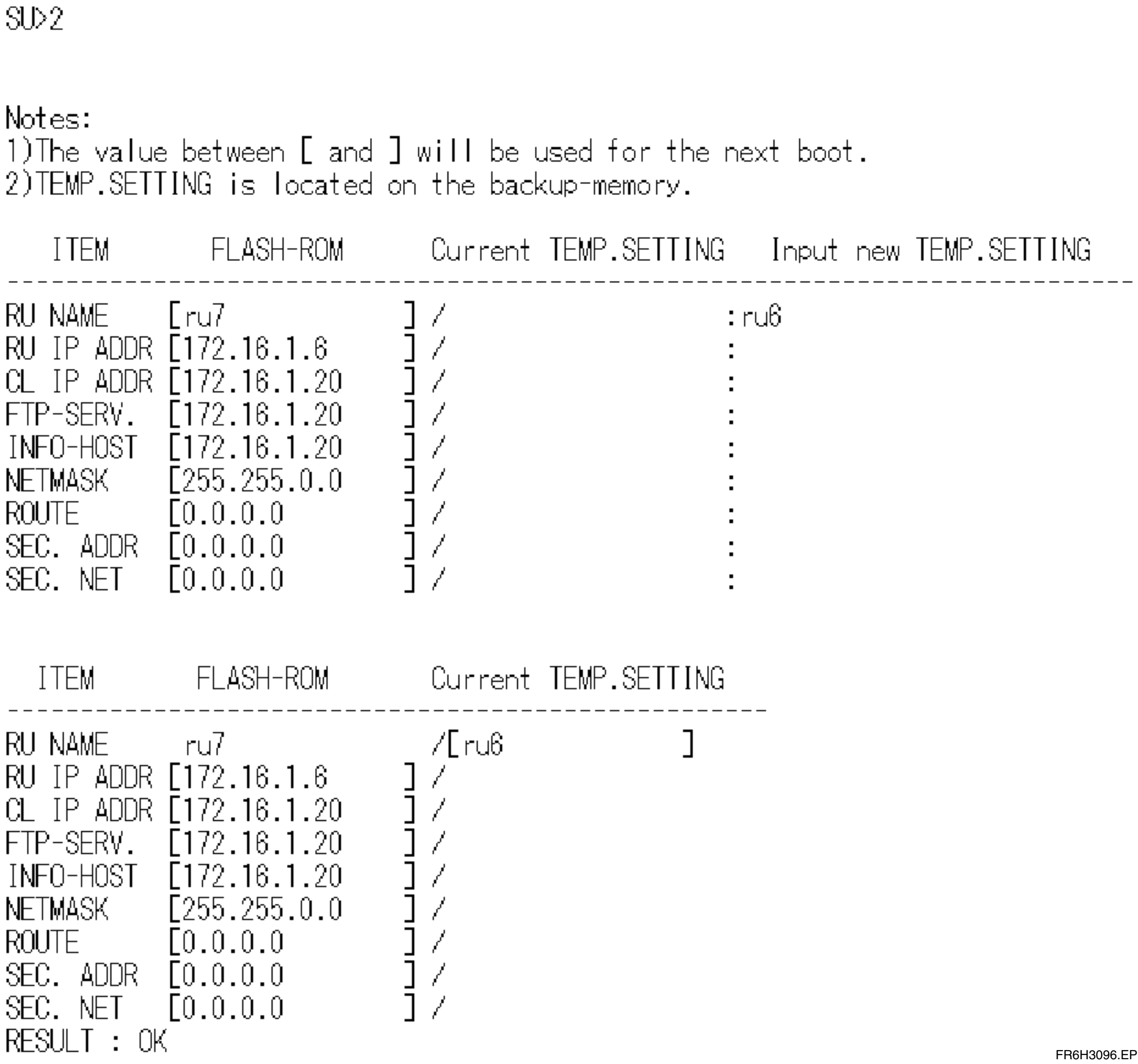
(2) Enter a new unit name (for example, “ru6”) in the “Input menu TEMP. SETTING” field.

The content entered is then displayed in the “Current TEMP. SETTING” field.

**◇ *REFFERENCE* ◇**

*To update the values in the FLASH-ROM, restart the RU.*

## ■ Display: Example where the unit name of the RU is temporarily changed (for version A05 or later)



```
SU>2


Notes:
1)The value between [ and ] will be used for the next boot.
2)TEMP.SETTING is located on the backup-memory.

   ITEM       FLASH-ROM      Current TEMP.SETTING   Input new TEMP.SETTING
-----------------------------------------------------------------------------
RU NAME    [ru7              ] /                   :ru6
RU IP ADDR [172.16.1.6     ] /                   :
CL IP ADDR [172.16.1.20    ] /                   :
FTP-SERV.  [172.16.1.20    ] /                   :
INFO-HOST  [172.16.1.20    ] /                   :
NETMASK    [255.255.0.0    ] /                   :
ROUTE      [0.0.0.0        ] /                   :
SEC. ADDR  [0.0.0.0        ] /                   :
SEC. NET   [0.0.0.0        ] /                   :

  ITEM       FLASH-ROM       Current TEMP.SETTING
----------------------------------------------------
RU NAME     ru7              /[ru6            ]
RU IP ADDR [172.16.1.6     ] /
CL IP ADDR [172.16.1.20    ] /
FTP-SERV.  [172.16.1.20    ] /
INFO-HOST  [172.16.1.20    ] /
NETMASK    [255.255.0.0    ] /
ROUTE      [0.0.0.0        ] /
SEC. ADDR  [0.0.0.0        ] /
SEC. NET   [0.0.0.0        ] /
RESULT : OK
```

FR6H3096.EPS

## [8] BACKUP MEMORY

Initializes the backup memory located on the CPU board of the RU.

### ■ Function

Initializes the following three types of information.

- Scanner information

  Set “HV ON/OFF data (soft setup information)” and “Scanner initial drive current value (LDIF)” to their soft default values.

- Mech information

  Set “FFM speed data” to its soft default value. Also initialize “HISTORY LOG” collected since power-ON.

- Soft information

  Set “RU HOST NAME (SET)”, “RU IP ADDRESS”, “HOST (CL) IP ADDRESS”, “FTP-SERVER IP ADDRESS”, “INFO-HOST IP ADDRESS”, and “NETMASK” to their soft default values.

### ■ Procedure

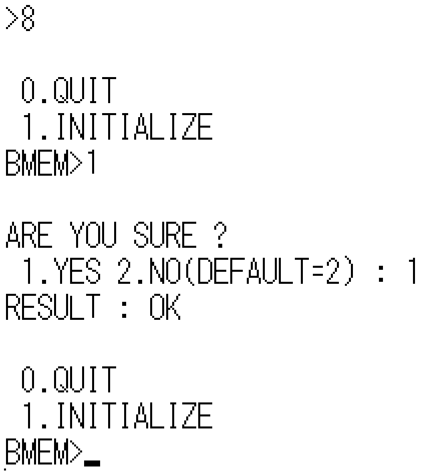
(1) [8][ENT] → [1][ENT]

The display prompts you to confirm whether the backup memory is to be initialized or not.

(2) [1][ENT]

The backup memory is initialized.

### ■ Display



```
>8

 0.QUIT
 1.INITIALIZE
BMEM>1

ARE YOU SURE ?
 1.YES 2.NO(DEFAULT=2) : 1
RESULT : OK

 0.QUIT
 1.INITIALIZE
BMEM>_
```

## [9] HV ON/HV OFF

**CAUTION**

*Before turning ON the HV switch (software switch), check to see whether the cover is installed. If the HV switch is turned ON with the cover removed, the photomultiplier will be damaged.*

Turns ON and OFF the HV switch (software switch).

When “[9] HV ON/OFF” is executed, the system checks the status of the HV switch before turning ON or OFF the HV switch.

When it is turned ON, the system checks a response from the photomultiplier board and displays the result.

### ■ Meaning of Display

| Display | | Status |
|---|---|---|
| HV ON | → | The HV switch is OFF. |
| HV OFF | → | The HV switch is ON. |

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# CR-IR346RU Service Manual

## Service Parts List（SP）

## Control Sheet

| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10.10.2000 | 00 | New release（FM2753） | All pages |
| 06.20.2001 | 02 | Corrections（FM3057） | 1, 2, 4 ～ 11, 13, 15 ～ 17, 19, 23, 25, 27, 29, 31 ～ 33, 35, 37, 39 ～ 49, 51, 53, 54, 56 ～ 67 |
| 02.20.2002 | 05 | Corrections（FM3327） | 1, 13, 17, 21, 25, 31, 38, 39, 41, 53, 56 ～ 67 |

# How to Use Service Parts List

## RANK

- Handling RANK characters (parts that are handled in a special manner during parts operation, such as replacement)

  It is assigned only to applicable parts.

| Character | Under Warranty | Out of Warranty |
|---|---|---|
| R | Must be returned. | Repairable |
| Q | Must be returned.<br>(We use for analysis.) | Not repairable |
| T | Must be returned.<br>(Consumable part. Not applicable for free of change.) | Not repairable |
| without R, Q, T | Must Not be returned. | Not repairable |

TR1Z0002.EPS

- Export regulation-applicable character

  (Parts without the following character are not controlled by Export regulation.)

| **Character** | **Significance** |
|---|---|
| + | Parts applicable to export regulations. |

TR1Z0003.EPS

- Fault RANK characters (which provide reference for determining the recommended stock quantity)

  All parts are assigned either A through E.

| **Character** | **Significance** |
|---|---|
| A | Consumable parts or parts that will be replaced at short intervals. |
| B | Parts that may become faulty accidentally and have a relatively high failure rate. |
| C | Parts that have a sufficiently long MTBF, but are expected to have a relatively high failure rate. |
| D | Parts that have a sufficiently long MTBF, but are expected to become faulty. |
| E | Parts that are necessary for fault analysis, or parts that may be needed in case of unexpected accidents such as man-induced damage. |

TR1Z0004.EPS

<The RANK guide>

The Fault RANK characters, Handling RANK characters, and Export regulation-applicable character are assigned in that order.

Thus, at leaset one character or up to three characters are assigned in the RANK column.

## REF.NO.

REF. NO. is a parts number indicated in the Service Parts Exploded Views. For parts having different functions, they are clearly distinguished in the REMARKS and SERIAL NUMBER columns.

## PART NUMBER

PART NUMBER is a code number that is unique to each parts.

An alphabetic letter at the right-most position of the code number has the following meaning.

❍ For hardware

The alphabet denotes the version number of a part. If parts have different version numbers, they are upward-compatible.

❍ For software

The alphabet denotes a difference in the specifications. Parts differing in the suffix are not compatible with each other. Although the version is indicated by a number, it is omitted.

## PART NAME

PART NAME represents a general name of a part.

## QTY.

- ❍ QTY. denotes the quantity of parts used in each unit.
- ❍ A parts with -S assigned to the end of the quantity represents a small part that is shipped in packs of 50. (Even if such a part is ordered in quantity of 1 , a pack containing 50 pieces of that part is supplied.)

## REMARKS

The REMARKS column indicates a unique name of a part of its relevant information of note.

## SERIAL NUMBER

The units may contain different parts depending on their shipment control number. SERIAL NUMBER indicates the shipment control number to which the relevant parts are applicable. If the SERIAL NUMBER column is blank, the parts are applicable to all the relevant units.
The shipment control number is represented by lower five disits of eight-disit number indicated on the ratings name plate.

## ■ REFER TO

The "REFER TO" column shows the reference sections concerning the registered parts whose removal/installation procedures are set forth in the "Check, Replacement, and Adjustment" volume (MC).
As regards the parts whose information is set forth in the "Check, Replacement, and Adjustment" volume (MC), the associated information about screws, E-rings, and the like is not presented within parts illustrations.
To confirm the information about screws, E-rings, and the like, refer to the "Check, Replacement, and Adjustment" volume (MC).

## ■ Quantities of recommended spare parts

It is recommended as a rough guide to hold in stock a certain quantity of parts according to the rank (A, B, C, D, E) assigned to the parts, as follows. For periodically replaced parts, hold them in stock separately.

Adjust the stock quantity of service parts depending on the number of working units (N).

Quantity used in a single system : Q

❍ N=1
Rank A = 1 + Q x 0.3
Rank C = 1 + Q x 0.05
Rank D = 1 + Q x 0.02
❍ 2≤N≤10
Rank A = 2 + N x Q x 0.3
Rank C = 2 + N x Q x 0.05
Rank D = 1 + N x Q x 0.02
❍ 11≤N≤300
Rank A = 3 + N x Q x 0.3
Rank C = 3 + N x Q x 0.05
Rank D = 3 + N x Q x 0.02

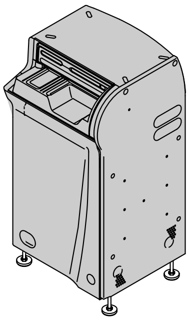
## ■ Precautions to be Observed When Returning Parts in Need of Repair

When returning a component in need of repair, pack it in the same manner as for the supplied substitute, using the substitute packing materials.

The use of different packing materials or packing methods may incur damage to packed component during transit.

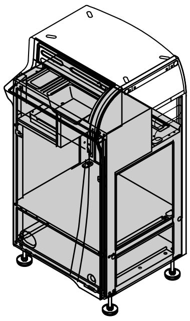
INDEX **01**

● カバー
COVER



INDEX **02**

● フレーム
FRAME



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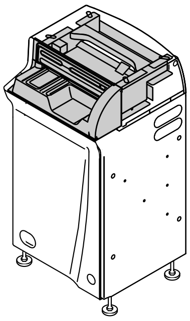
● カセッテセット部
CASSETTE SET UNIT



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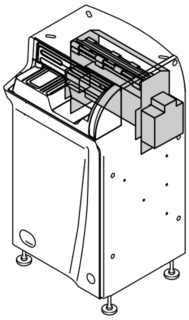
● 消去搬送部
ERASURE CONVEYOR



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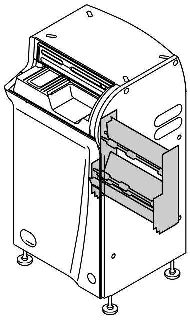
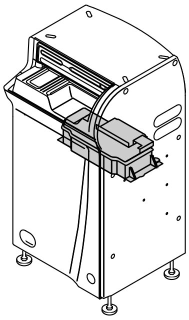
● 幅寄搬送部
SIDE-POSITIONING CONVEYOR



INDEX **06**

● 光学部
SCANNING OPTICS UNIT



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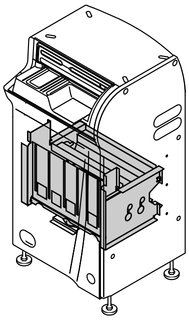
● 副走査部
SUBSCANNING UNIT



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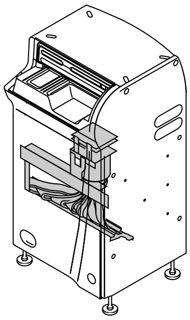
● 集光部
LIGHT-COLLECTING UNIT



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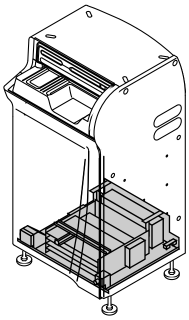
● 制御部
CONTROLLER



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● ケーブル
CABLE

INDEX **11**

● 回路図
CIRCUIT DIAGRAM

INDEX **12**

● 部品番号検索表
PARTS NOS. SEARCH TABLE

FR6H5005.EPS

| INDEX **13** | INDEX **14** |
|---|---|
| ● ネジ・座金類の表示記号一覧表<br>TABLE OF SCREWS / WASHERS INDICATION SYMBOLS | ● 消耗品一覧表<br>LIST OF QUICK WEARING PARTS |

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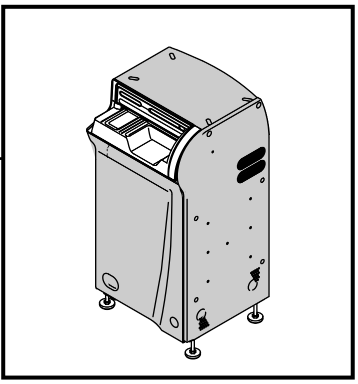
# 01A カバー 1
# COVER 1



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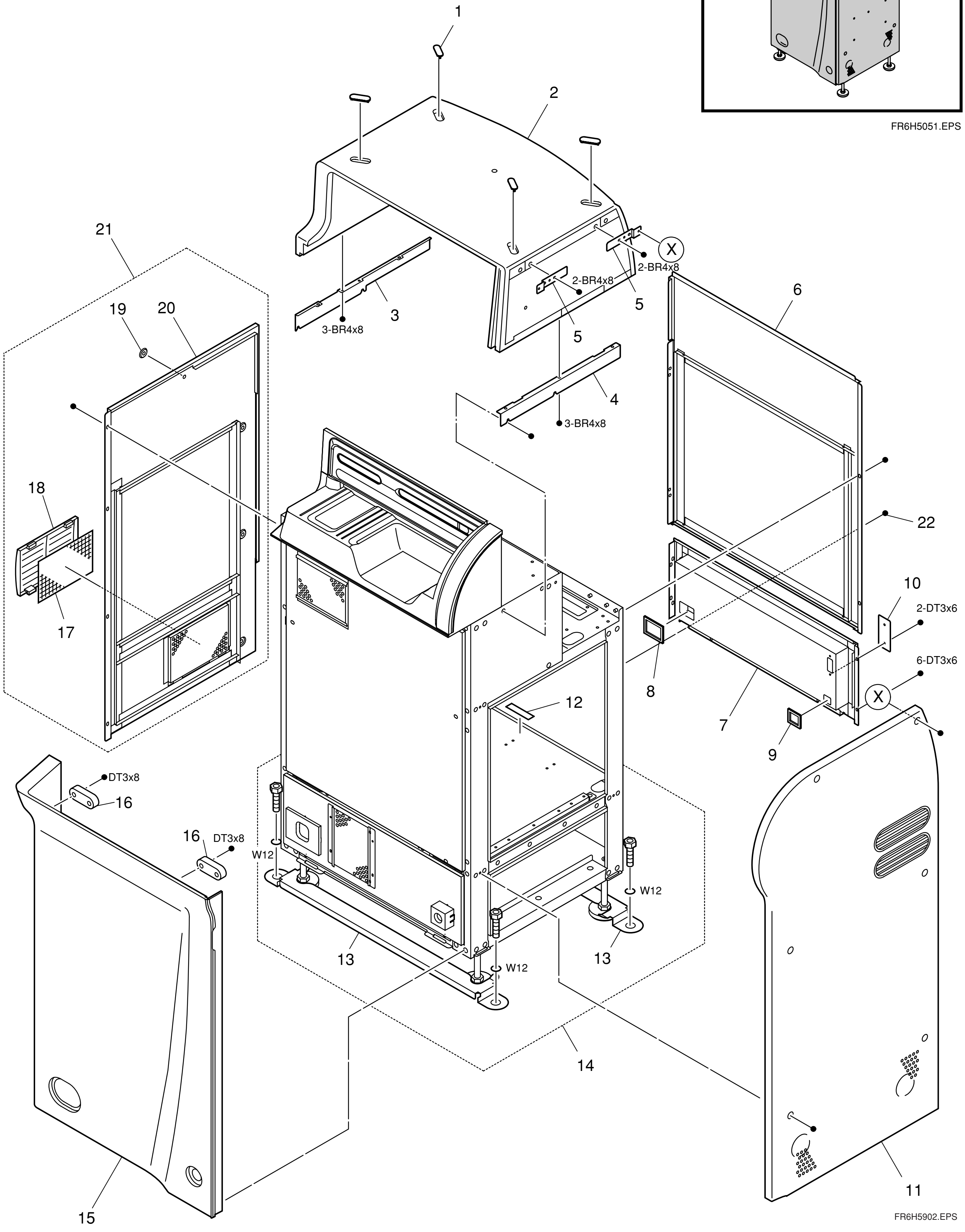
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21
X
2-BR4x8
2-BR4x8
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6
19
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3
3-BR4x8
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4
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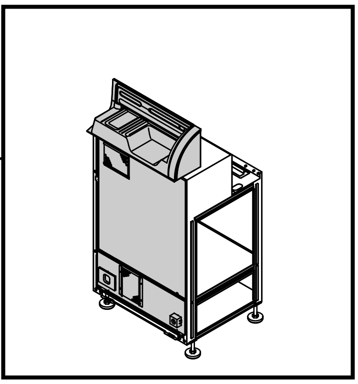
18
22
10
2-DT3x6
17
6-DT3x6
8
12
X
7
9
DT3x8
16
16
DT3x8
W12
W12
13
13
W12
14
11
15

FR6H5902.EPS

# カバー 1
# COVER 1

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 350Y1519 | ネジカバー | Screw Cover | 4 | | | |
| E | 2 | 350Y1496 | 上カバー | Top Cover | 1 | | | 3.1 |
| E | 3 | 356N8225B | ブラケット | Bracket | 1 | | | |
| E | 4 | 356N8226B | ブラケット | Bracket | 1 | | | |
| E | 5 | 356N8171A | ブラケット | Bracket | 2 | | | |
| E | 6 | 350N2244B | 背面上カバー | Upper Rear Cover | 1 | | | 3.1 |
| E | 7 | 350N2245B/C | 背面下カバー | Lower Rear Cover | 1 | | | |
| D | 8 | 345N1493 | シールド材 | Shielding Tape | 1 | | | |
| D | 9 | 345N1494A | シールド材 | Shielding Tape | 1 | | | |
| E | 10 | 352N0493A | パネル | Panel | 1 | | | |
| E | 11 | 350Y1483 | 右側面カバーアセンブリ | Right-Hand Side Cover Assembly | 1 | | | 3.1 |
| E | 12 | 405N1770A | 銘板 | Label | 1 | | | |
| E | 13 | 356N8602 | ブラケット | Bracket | 2 | | | |
| E | 14 | 898Y0713 | キット | Kit | 1 | Option | | |
| E | 15 | 350Y1530 | 前面カバー | Front Cover | 1 | | | 3.1 |
| D | 16 | 316S3098 | ラッチ | Latch | 2 | | | |
| D | 17 | 376N0198A | メカニカルフィルタ | Mechanical Filter | 1 | | | |
| D | 18 | 345N1280A | ルーバ | Louver | 1 | | | |
| E | 19 | 350N2059A | カバー | Cover | 4 | | | 3.1 |
| E | 20 | 350N2243B | 左側面カバー | Left-Hand Side Cover | 1 | | | 3.1 |
| E | 21 | 350Y1482 | 左側面カバーアセンブリ | Left-Hand Side Cover Assembly | 1 | | | 3.1 |
| E | 22 | 308S0062 | 特殊ネジ | Screw | 1 | | | |

# 01B カバー 2
# COVER 2



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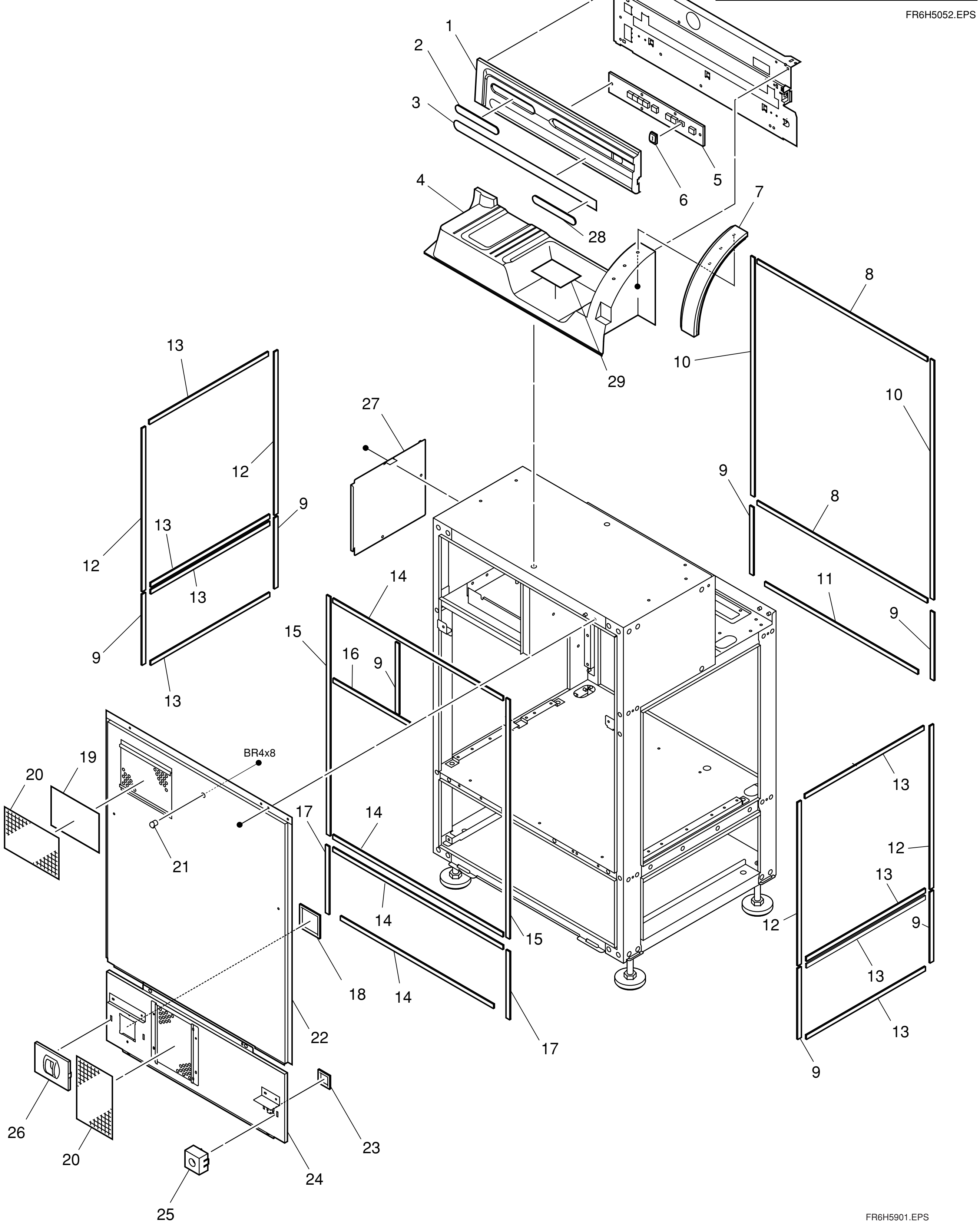
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BR4x8
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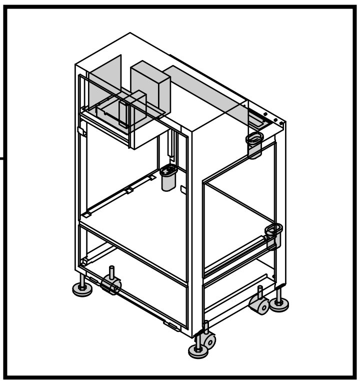
FR6H5901.EPS

# カバー 2
# COVER 2

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 352Y0058B | パネルアセンブリ | Panel Assembly | 1 | | | 5.1 |
| E | 2.1 | 405Y0157C | 銘板 | Label | 1 | | | 5.1 |
| E | 2.2 | 405Y0166 | 銘板 | Label | 1 | Japan Only(346V) | | 5.1 |
| E | 3.1 | 405N2644 | 銘板 | Label | 1 | INC | | 5.1 |
| E | 3.2 | 405N2645 | 銘板 | Label | 1 | MET | | 5.1 |
| E | 4 | 357N1271C | 台 | Base | 1 | | | 5.1 |
| D | 5 | 113Y1469B | ボードアセンブリ | Board Assembly | 1 | LED12A | | 5.1 |
| D | 6 | 340N0170D | キートップ | Key Top | 1 | | | 5.1 |
| D | 7 | 350N2387C | カバー | Cover | 1 | | | 5.1 |
| D | 8 | 382N1221A | テープ | Tape | 2 | W10 x L476 | | |
| D | 9 | 382N1222A | テープ | Tape | 7 | W10 x L171 | | |
| D | 10 | 382N1225A | テープ | Tape | 2 | W10 x L424 | | |
| D | 11 | 382N1315A | テープ | Tape | 1 | W10 x L429 | | |
| D | 12 | 382N1219A | テープ | Tape | 4 | W10 x L396 | | |
| D | 13 | 382N1220A | テープ | Tape | 8 | W10 x L333 | | |
| D | 14 | 382N1217A | テープ | Tape | 4 | W10 x L475 | | |
| D | 15 | 382N1218A | テープ | Tape | 2 | W10 x L580 | | |
| D | 16 | 382N1224A | テープ | Tape | 1 | W10 x L214 | | |
| D | 17 | 382N1223A | テープ | Tape | 2 | W10 x L164 | | |
| D | 18 | 345N1481 | シールド材 | Shielding Tape | 1 | | | |
| D | 19 | 376N0215B | メカニカルフィルタ | Mechanical Filter | 1 | T5 x W94 x L134 | | |
| D | 20 | 376N0198A | メカニカルフィルタ | Mechanical Filter | 2 | | | |
| D | 21 | 343N0048 | フック | Hook | 1 | | | 3.1 |
| E | 22 | 345N1406D | 上側遮板 | Upper Light Protect Plate | 1 | | | 3.1 |
| D | 23 | 345N1490A | シールド材 | Shielding Tape | 1 | | | 3.1 |
| E | 24 | 345N1491C | 下側遮板 | Lower Light Protect Plate | 1 | | | 3.1 |
| E | 25 | 350N2390C | カバー | Cover | 1 | | | 3.1 |
| E | 26 | 350N2389C | カバー | Cover | 1 | | | |
| E | 27 | 345N1478B | 遮板 | Light Protect Plate | 1 | | | 4.1<br>4.2<br>6.2 |
| E | 28 | 405N2762B | 銘板 | Label | 1 | | | 5.1 |
| E | 29 | 405N2643 | 銘板 | Label | 1 | | | |

# 02 フレーム FRAME



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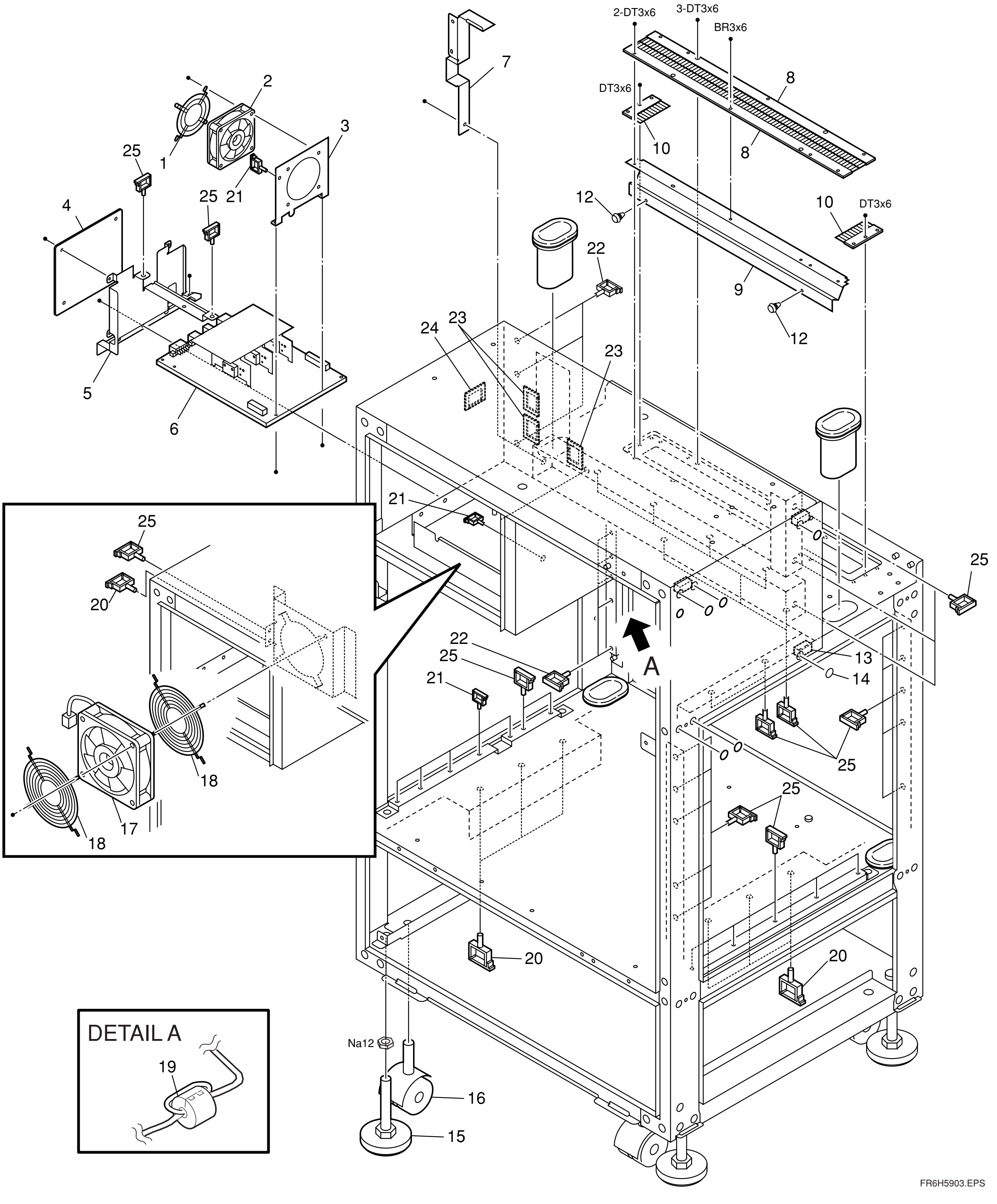

2-DT3x6
3-DT3x6
BR3x6
7
2
8
3
DT3x6
25
1
10
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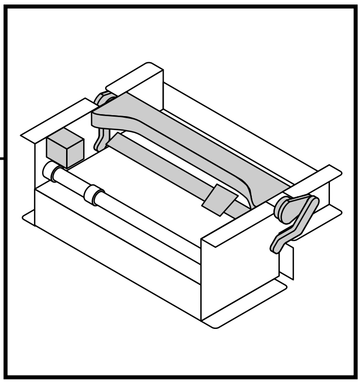
21
12
10
DT3x6
4
22
9
12
24
23
23
5
6
21
25
25
20
22
25
A
13
21
14
25
18
25
17
18
20
20
DETAIL A
19
Na12
16
15

FR6H5903.EPS

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 364S0006 | ガード | Guard | 1 | | | 4.3 |
| D | 2 | 119S0006 | ファン | Fan | 1 | FAN4 | | 4.3 |
| E | 3 | 356N6923B | ブラケット | Bracket | 1 | | | 4.3 |
| C | 4 | 113Y1471D | INV12B | INV12B | 1 | INV12B | | 4.1<br>4.4 |
| E | 5 | 356N6928E | ブラケット | Bracket | 1 | | | 4.4 |
| C | 6 | 109N0016C | 蛍光灯安定器 | Lamp Stabilizer | 1 | INV12A | | 4.1<br>4.4 |
| E | 7 | 356N6927B | ブラケット | Bracket | 1 | | | 6.10 |
| D | 8 | 387N0130D | 帯電防止材 | Antistatic Brush | 2 | | | 6.1 |
| D | 9 | 363N2242B | ガイド板 | Guide plate | 1 | | | 6.1 |
| D | 10 | 387N0131B | 帯電防止材 | Antistatic Brush | 2 | | | 6.1 |
| | 11 | *** | | | | | | |
| D | 12 | 386S0028 | 緩衝機材 | Shock Absorber | 2 | | | 6.1 |
| D | 13 | 382N1398 | スポンジテープ | Sponge Tape | 3 | | | |
| E | 14 | 375N0078 | シール | Seal | 6 | | | |
| D | 15 | 367S2027 | アジャスター | Adjuster | 4 | | | |
| D | 16 | 367S1087 | キャスター | Caster | 4 | | | |
| D | 17 | 119S0009 | ファン | Fan | 1 | FAN3 | | 4.5 |
| E | 18 | 364S0001 | ガード | Guard | 2 | | | 4.5 |
| E | 19 | 138S0345 | フェライトコア | Ferrite Bead | 1 | | | |
| E | 20 | 318F0172 | コードクランプ | Cord Clamp | 7 | | | |
| E | 21 | 318S1164 | ブッシュ | Bushing | 6 | | | |
| E | 22 | 318S1174 | コードクランプ | Cord Clamp | 8 | | | |
| E | 23 | 318F0174 | コードクランプ | Cord Clamp | 3 | EDS17L | | |
| E | 24 | 316S1122 | ブッシュ | Bushing | 1 | | | |
| E | 25 | 316S1037 | コードクランプ | Cord Clamp | 31 | | | |

# 03A カセッテセット部 1
# CASSETTE SET UNIT 1



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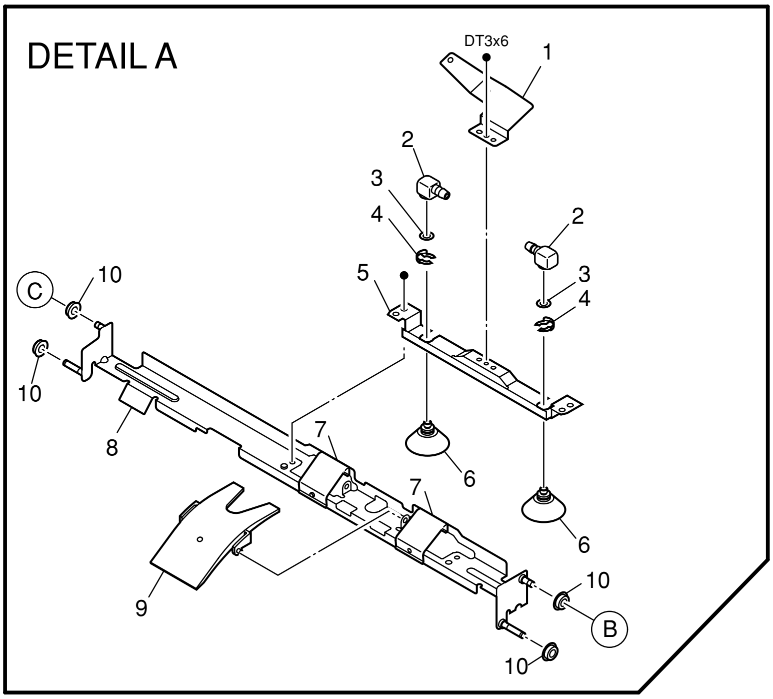
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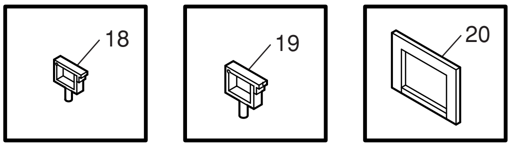

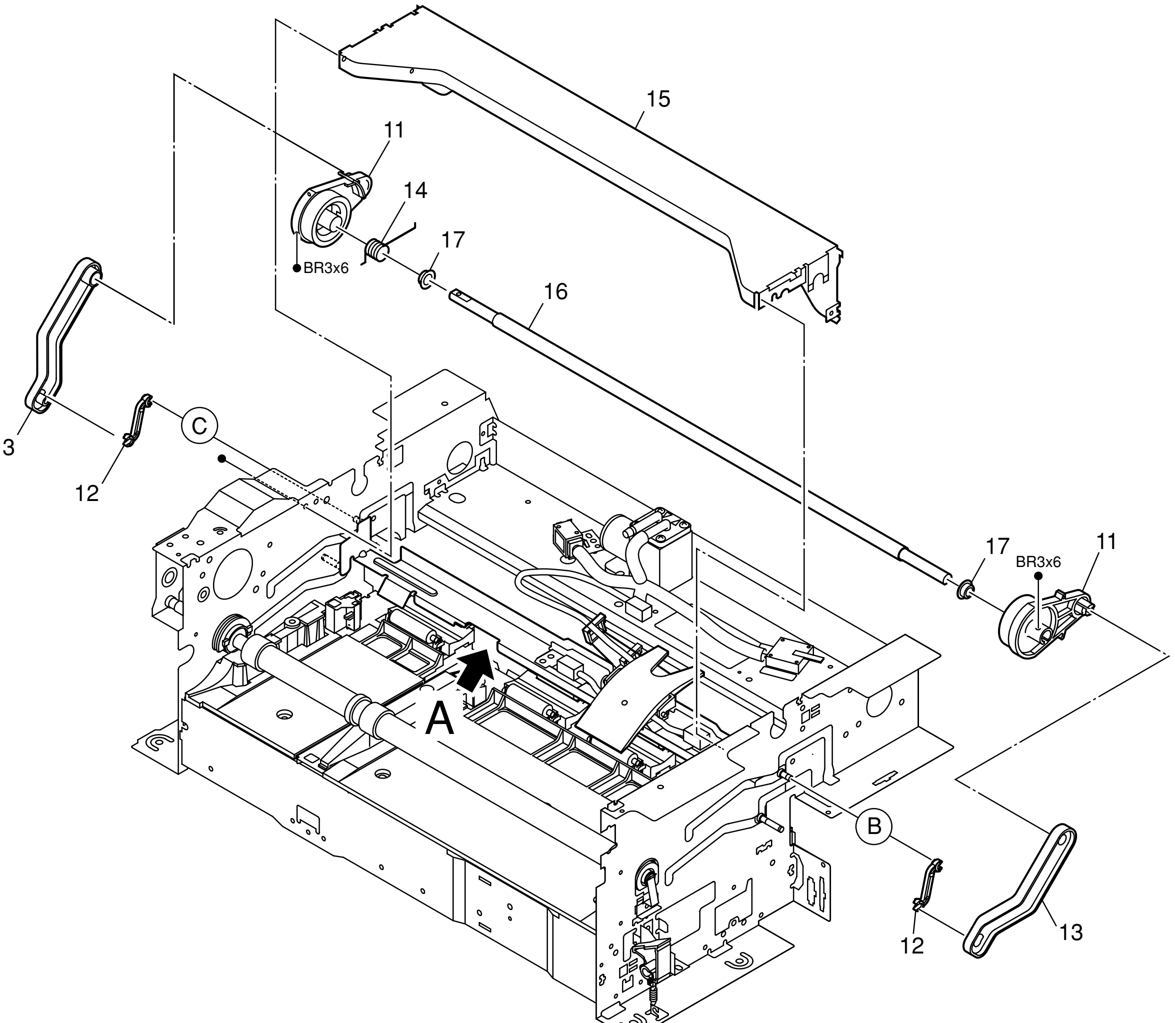
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BR3x6
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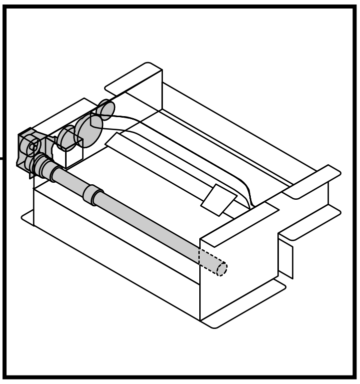
# カセッテセット部 1
# CASSETTE SET UNIT 1

**03A**

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 356N6830B | ブラケット | Bracket | 1 | | | 5.9 |
| D | 2 | 372N0098 | 管継手 | Joint | 2 | | | 5.9 |
| A | 3 | 375S0040 | パッキン | Packing | 2 | | | 5.9 |
| E | 4 | 315G311017 | 止め具 | Clamp | 2 | | | 5.9 |
| E | 5 | 356N8167C | ブラケット | Bracket | 1 | | | 5.9 |
| A | 6 | 392N0009A | 吸着盤 | Suction Cup | 2 | | | 5.9 |
| D | 7 | 388Y0014 | 板バネ | Leaf Spring | 2 | | | |
| E | 8 | 341N0938H | アーム | Arm | 1 | | | 5.10 |
| E | 9 | 356Y0187 | ブラケット | Bracket | 1 | | | 5.9 |
| D | 10 | 322SF178 | 軸受 | Bearing | 4 | | | 5.10 |
| D | 11 | 327N1103610D | 平歯車 | Spur Gear | 2 | | | |
| D | 12 | 322N0037D | すべり軸受 | Plain Bearing | 2 | | | 5.10 |
| E | 13 | 341N0937B | アーム | Arm | 2 | | | 5.10 |
| D | 14 | 388N3082C | ねじりコイルバネ | Torsion Coil Spring | 1 | | | |
| E | 15 | 346N1078D | 補助板 | Plate Support | 1 | | | 5.10<br>5.14<br>5.17 |
| E | 16 | 319N3604A | 軸 | Shaft | 1 | | | 5.10<br>5.14<br>5.17 |
| E | 17 | 322SF149 | 軸受 | Bearing | 2 | | | 5.10<br>5.14<br>5.17 |
| E | 18 | 318S1164 | ブッシュ | Bushing | 29 | | | |
| E | 19 | 318S1174 | ブッシュ | Bushing | 1 | | | |
| E | 20 | 316S2028 | コードクランプ | Cord Clamp | 1 | | | |

# 03B

## カセッテセット部 2
## CASSETTESET UNIT 2



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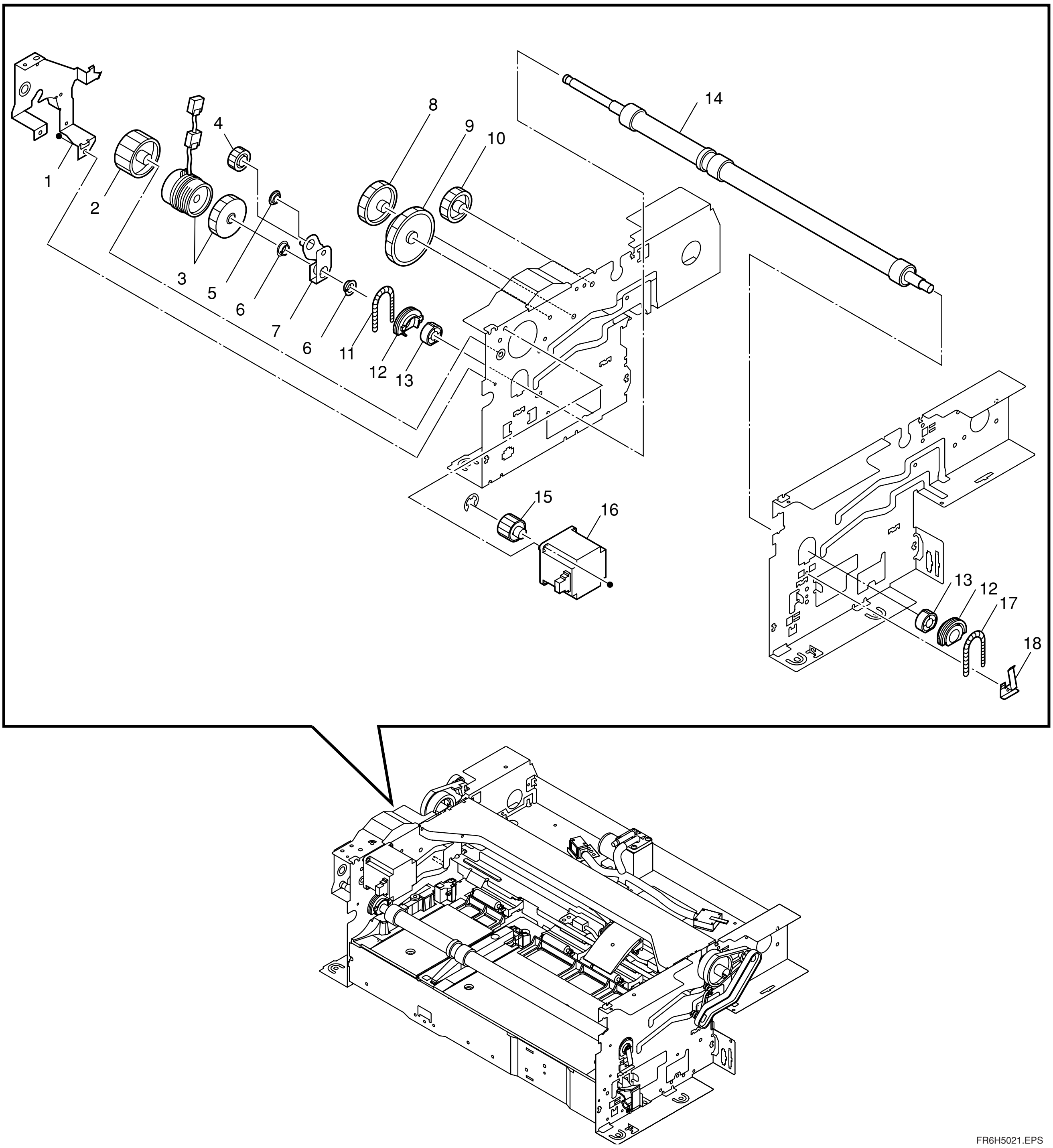
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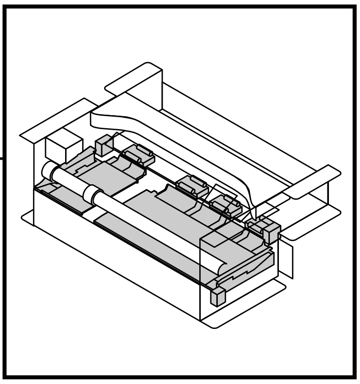
# カセッテセット部 2
# CASSETTE SET UNIT 2

## 03B

| RANK | REF. | PART NO. | PART NAME | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|
| E | 1 | 356N6832F | ブラケット Bracket | 1 | | | 5.11<br>5.12 |
| D | 2 | 327N1103802 | 平歯車 Spur Gear | 1 | | | 5.12 |
| D | 3 | 106Y0005B | 電磁クラッチ Electromagnetic Clutch | 1 | CLA1 | | 5.12 |
| D | 4 | 327N1101904 | 平歯車 Spur Gear | 1 | | | 5.12 |
| D | 5 | 322SY065 | すべり軸受 Plain Bearing | 1 | | | 5.12 |
| D | 6 | 322N0038A | すべり軸受 Plain Bearing | 2 | | | 5.12 |
| E | 7 | 356N6831C | ブラケット Bracket | 1 | | | 5.12 |
| D | 8 | 327S1104002A | 平歯車 Spur Gear | 1 | | | 5.15 |
| D | 9 | 327N0155A | 平歯車 Spur Gear | 1 | | | 5.12 |
| D | 10 | 327N0144A | 平歯車 Spur Gear | 1 | | | 5.12 |
| D | 11 | 388N2450B | 引張りコイルバネ Extension Spring | 1 | L=116mm | | 5.12 |
| D | 12 | 360N0360A | ハウジング Housing | 2 | | | 5.12 |
| D | 13 | 360N0363 | ハウジング Housing | 2 | | | 5.12 |
| D | 14 | 334N0034E | ローラ Roller | 1 | | | 5.12 |
| D | 15 | 327N0138A | 平歯車 Spur Gear | 1 | | | 5.11 |
| D | 16 | 118SX063 | パルスモータ Stepping Motor | 1 | MA1 | | 5.11 |
| D | 17 | 388N2485A | 引張りコイルバネ Extension Spring | 1 | L=104mm | | 5.12 |
| D | 18 | 388N1192A | 板バネ Leaf Spring | 1 | | | 5.12 |

# 03C

# カセッテセット部 3
# CASSETTE SET UNIT 3



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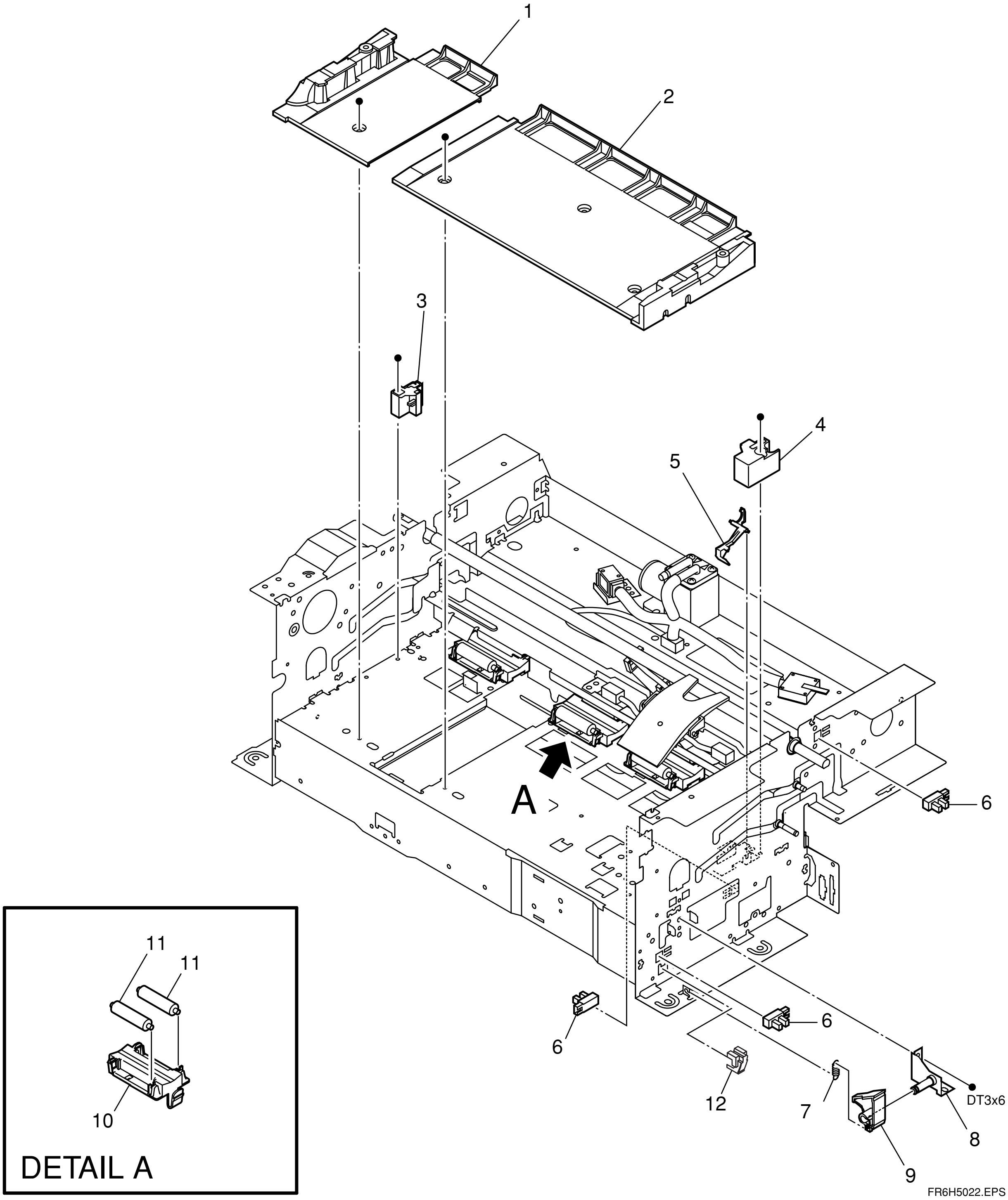
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DETAIL A

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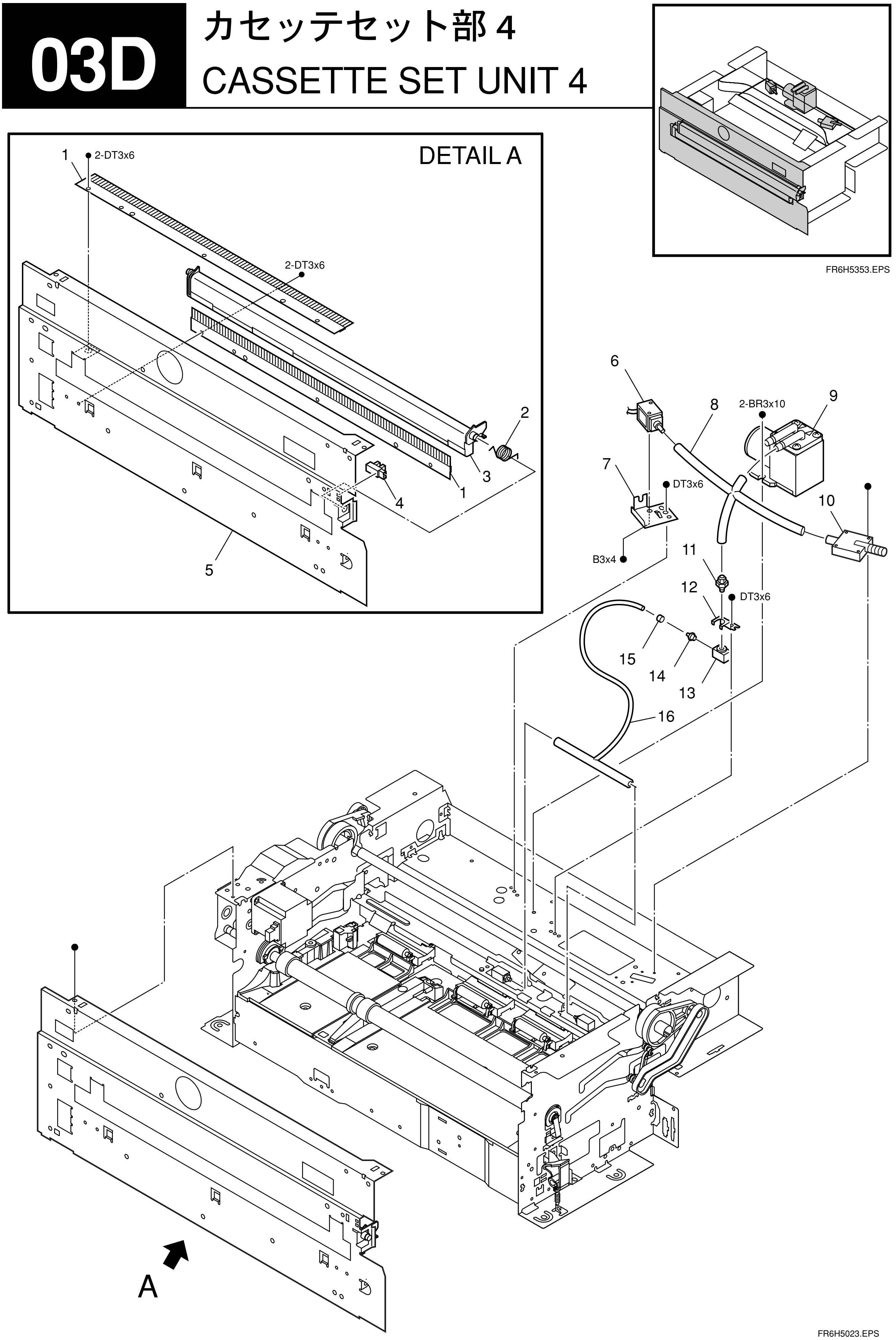
# カセッテセット部 3
# CASSETTE SET UNIT 3

# 03C

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 363N2243D | ガイド板 | Guide Plate | 1 | | | 5.13 |
| D | 2 | 363N2062G | ガイド板 | Guide Plate | 1 | | | 5.13 |
| D | 3 | 332N0522D | ストッパ | Stopper | 1 | | | 5.14 |
| D | 4 | 332N0523D | ストッパ | Stopper | 1 | | | 5.14 |
| E | 5 | 366N0055E | アクチュエータ | Actuator | 1 | | | 5.15 |
| D | 6 | 146S0029 | フォトセンサ | Photo Sensor | 3 | SA2,SA3,SA4 | | 5.16 |
| D | 7 | 388N2451 | 引張りコイルバネ | Extension Spring | 1 | | | |
| E | 8 | 356N6829C | ブラケット | Bracket | 1 | | | |
| E | 9 | 341N0940B | アーム | Arm | 1 | | | |
| D | 10 | 363N2065D | ガイド板 | Guide Plate | 4 | | | 5.17<br>5.18 |
| D | 11 | 334N3513B | ゴムローラ | Rubber Roller | 8 | | | 5.17<br>5.18 |
| D | 12 | 363N2388 | ガイド | Guide | 1 | | #450~ | |

# 03D

## カセッテセット部 4
## CASSETTE SET UNIT 4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B3x4
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DT3x6
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A

FR6H5353.EPS

FR6H5023.EPS

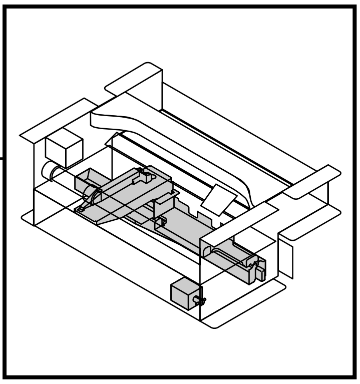
# カセッテセット部 4
# CASSETTE SET UNIT 4

**03D**

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 387N0130D | 帯電防止材 | Antistatic Brush | 2 | | | 5.2 |
| D | 2 | 388N3081B | ねじりコイルバネ | Torsion Coil Spring | 1 | | | 5.2 |
| D | 3 | 398N0059D | シャッタ | Shutter | 1 | | | 5.2 |
| D | 4 | 146S0029 | フォトセンサ | Photo Sensor | 1 | SA1 | | 5.1 |
| E | 5 | 345N1404D | 遮板 | Light Protect Plate | 1 | | | 5.1 |
| D | 6 | 134Y0056B | 電磁バルブ | Solenoid Valve | 1 | SVA1 | | |
| E | 7 | 356N8168A | ブラケット | Bracket | 1 | | | |
| D | 8 | 370N0256B | ホース | Hose | 1 | | | 5.8 |
| A | 9 | 133Y1031A | 電動ポンプ | Pump | 1 | PA1 | | |
| D | 10 | 128S0392 | スイッチ | Switch | 1 | SA5 | | 5.8 |
| D | 11 | 372S0050 | 管継手 | Joint | 1 | | | |
| E | 12 | 356N8315A | ブラケット | Bracket | 1 | | | |
| D | 13 | 372S0049 | 管継手 | Joint | 1 | | | |
| D | 14 | 372S0053 | 管継手 | Joint | 1 | | | |
| E | 15 | 316S0146 | 止め具 | Clamp | 1 | | | |
| D | 16 | 370N0255B | ホース | Hose | 1 | | | |

# 03E

# カセッテセット部 5
# CASSETTE SET UNIT 5



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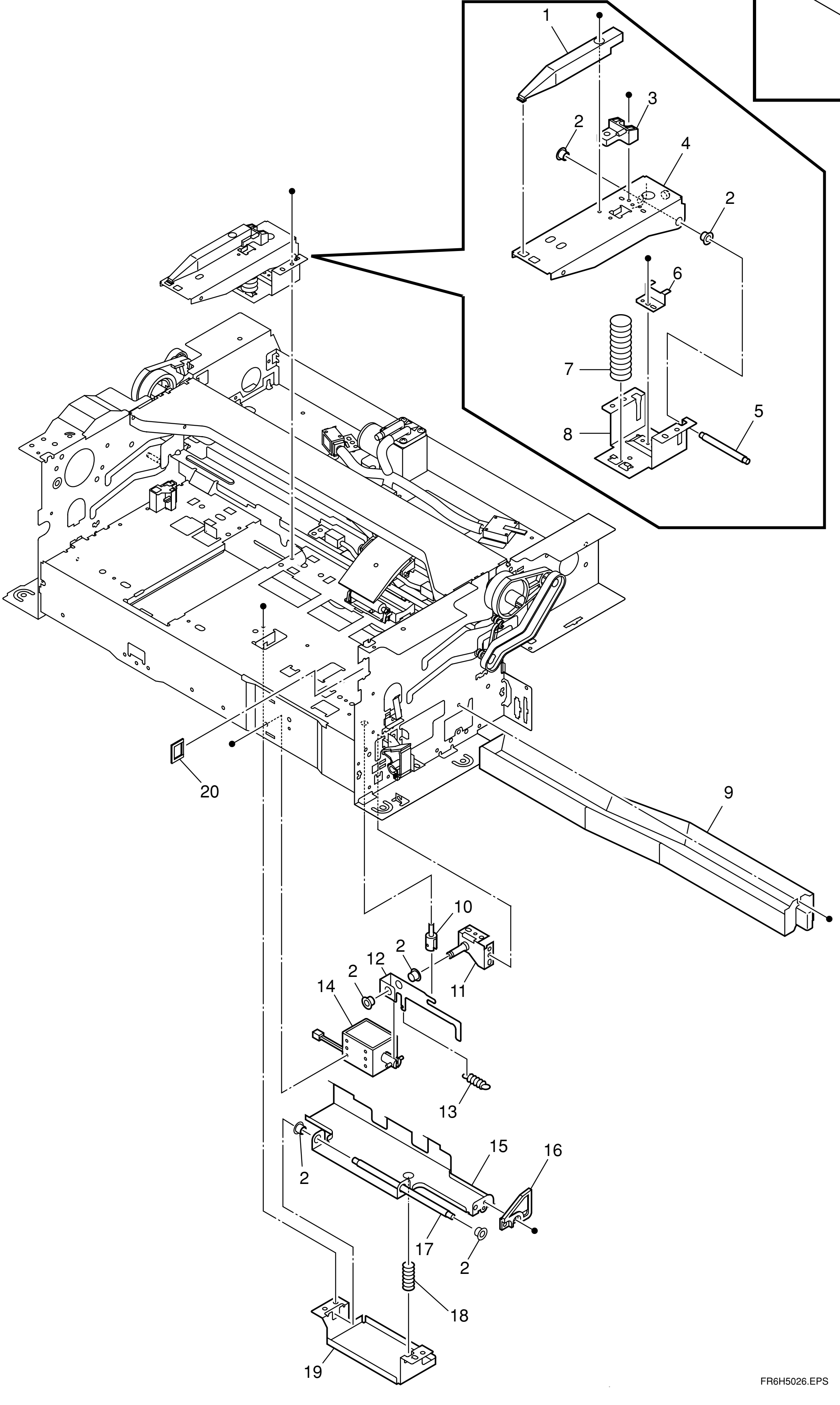
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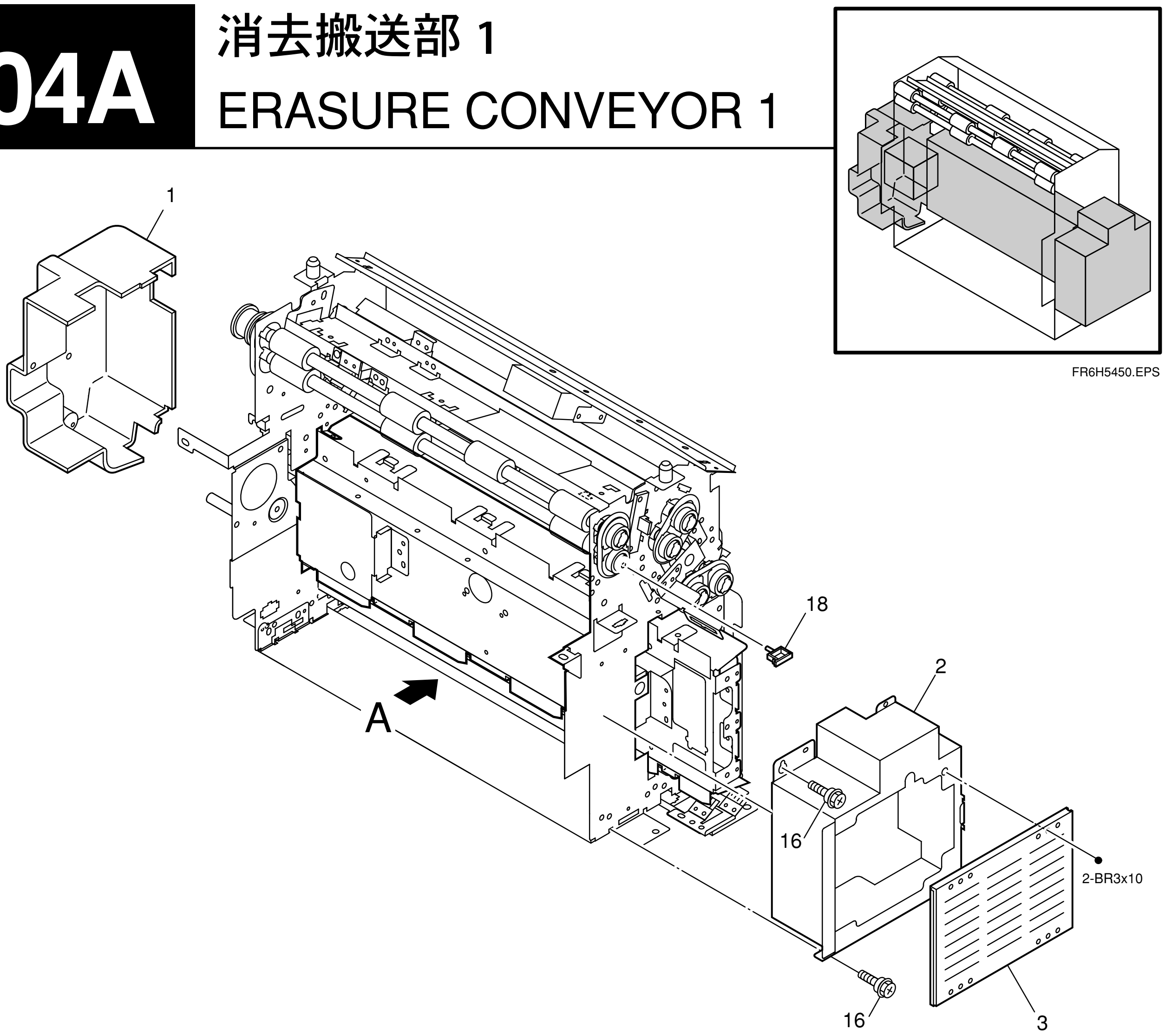
# カセッテセット部 5
# CASSETTE SET UNIT 5

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 363N2076C | ガイド | Guide | 1 | | | 5.7<br>5.18 |
| D | 2 | 322SY066 | すべり軸受 | Plain Bearing | 6 | | | 5.4<br>5.18 |
| D | 3 | 332N0521B | ストッパ | Stopper | 1 | | | 5.7<br>5.18 |
| E | 4 | 356N6823D | ブラケット | Bracket | 1 | | | 5.18 |
| E | 5 | 319N3601B | 軸 | Shaft | 1 | | | 5.18 |
| E | 6 | 356N6828B | ブラケット | Bracket | 1 | | | 5.18 |
| D | 7 | 388N1157A | 圧縮コイルバネ | Compression Coil Spring | 1 | | | 5.18 |
| E | 8 | 356N6824C | ブラケット | Bracket | 1 | | | 5.18 |
| E | 9 | 350N2496A | カバー | Cover | 1 | | | 5.4 |
| E | 10 | 319Y1161A | 軸 | Shaft | 1 | | | 5.6 |
| E | 11 | 356N6829C | ブラケット | Bracket | 1 | | | 5.6 |
| E | 12 | 341N0936E | アーム | Arm | 1 | | | 5.6 |
| D | 13 | 388N2449 | 引張りコイルバネ | Extension Spring | 1 | | | 5.6 |
| D | 14 | 107Y0169A | ソレノイド | Solenoid | 1 | SolA1 | | 5.5 |
| E | 15 | 356N6825D | ブラケット | Bracket | 1 | | | 5.4 |
| D | 16 | 363N1788A | ガイド | Guide | 1 | | | 5.4 |
| E | 17 | 319N3602B | 軸 | Shaft | 1 | | | 5.4 |
| D | 18 | 388N1158A | 圧縮コイルバネ | Compression Coil Spring | 1 | | | 5.4 |
| E | 19 | 356N6826B | ブラケット | Bracket | 1 | | | 5.4 |
| E | 20 | 318F0174 | コードクランプ | Cord Clamp | 1 | EDS17L | | |

# 04A 消去搬送部 1

# ERASURE CONVEYOR 1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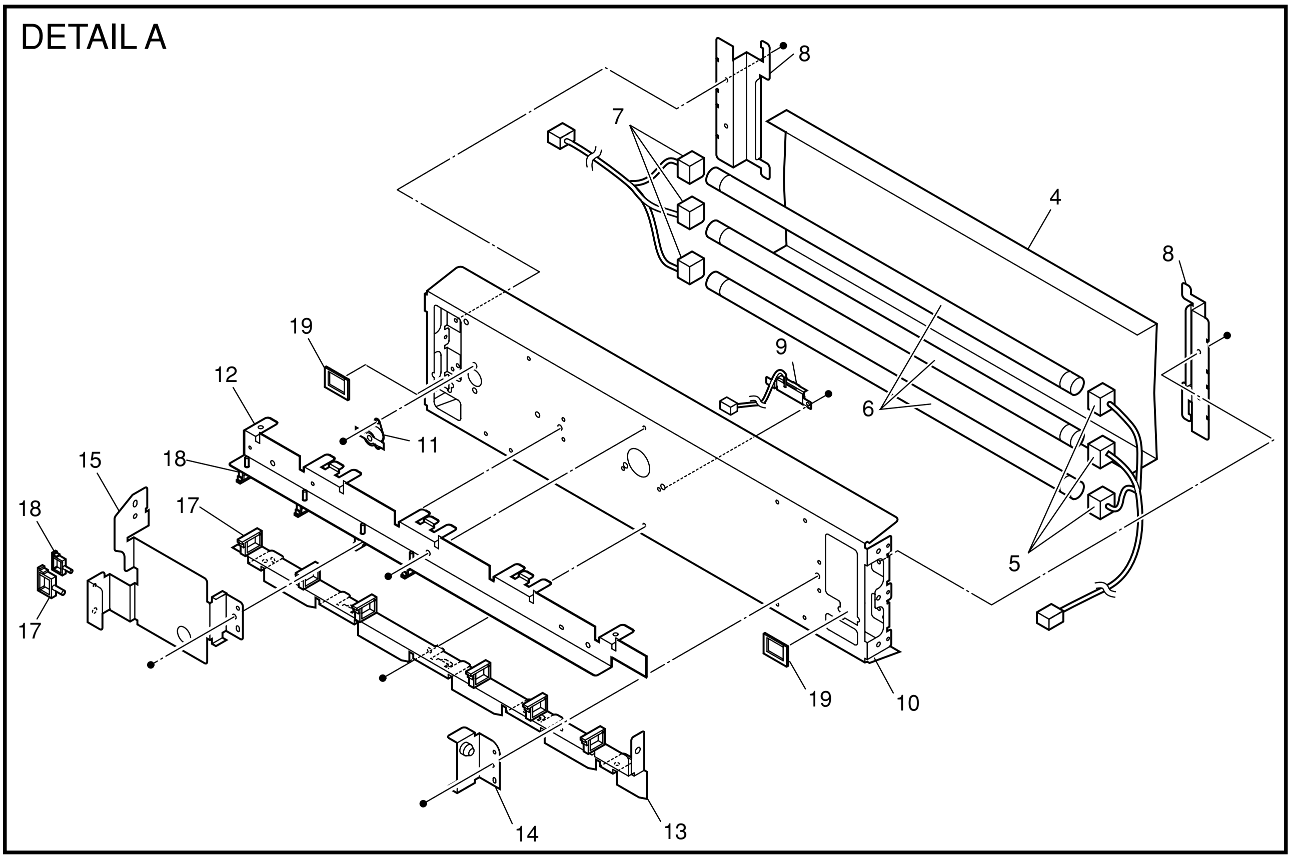
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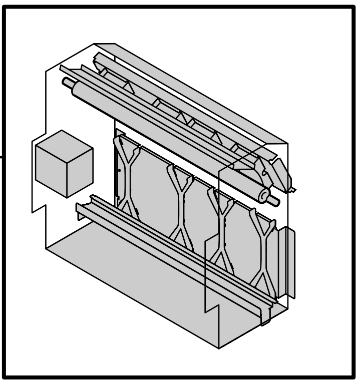
FR6H5301.EPS

# 消去搬送部 1
# ERASURE CONVEYOR 1

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 358N0163D | ボックス | Box | 1 | | | 6.2 |
| E | 2 | 358N0165F | ボックス | Box | 1 | | | 6.7 |
| D | 3 | 345N1502 | ルーバ | Louver | 1 | | | |
| A | 4 | 603N0182E | フィルタ | Filter | 1 | | | 6.2<br>6.3<br>6.4 |
| D | 5 | 120Y0078D | ソケット | Socket | 1 | | | 6.2<br>6.5 |
| A | 6 | 123N0007B | 蛍光ランプ | Fluorescence Lamp | 3 | | | 6.2<br>6.4 |
| D | 7 | 120Y0079D | ソケット | Socket | 1 | | | 6.2<br>6.5 |
| E | 8 | 401N0778B | 押え板 | Counter Plate | 2 | | | 6.2<br>6.3<br>6.4 |
| D | 9 | 115Y0035B | サーミスタ | Thermo Switch | 1 | THB1 | | 6.2<br>6.6 |
| D | 10 | 407N0113F | 反射板 | Reflective Plate | 1 | | | 6.2 |
| D | 11 | 115S0094 | 感熱スイッチ | Thermo Switch | 1 | TSWB1<br>05EP-4183 65℃ | | 6.2<br>6.3 |
| E | 12 | 356N6845B | ブラケット | Bracket | 1 | | | 6.2 |
| E | 13 | 356N6840B | ブラケット | Bracket | 1 | | | 6.2 |
| E | 14 | 356N6842D | ブラケット | Bracket | 1 | | | 6.2 |
| E | 15 | 356N6838C | ブラケット | Bracket | 1 | | | 6.2<br>6.5<br>6.6 |
| E | 16 | 308S0082 | 特殊ネジ | Screw | 2 | M3 x 6 | | 6.7 |
| E | 17 | 316S1037 | ブッシュ | Bushing | 7 | | | |
| E | 18 | 318S1164 | ブッシュ | Bushing | 6 | | | |
| E | 19 | 318F0174 | コードクランプ | Cord Clamp | 2 | EDS17L | | |

## 04B

# 消去搬送部 2
# ERASURE CONVEYOR 2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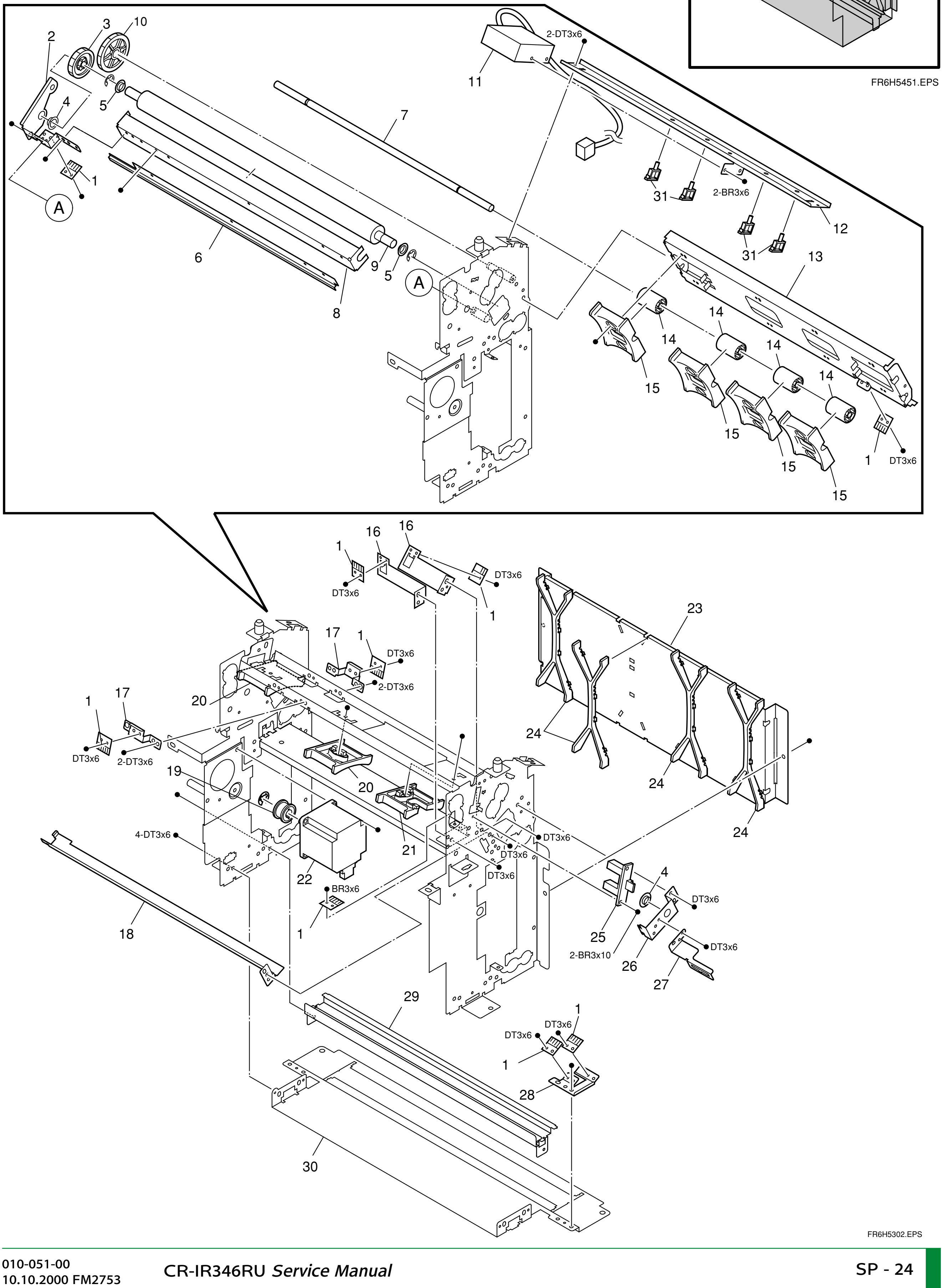

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DT3x6
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DT3x6
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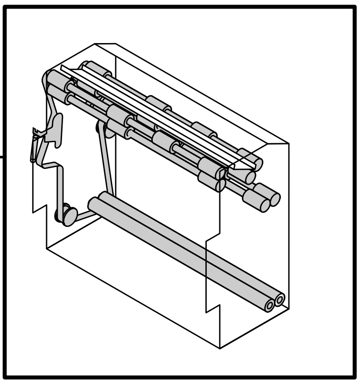
FR6H5302.EPS

# 消去搬送部 2
# ERASURE CONVEYOR 2
# 04B

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 387N0138C | 帯電防止材 | Antistatic Brush | 9 | | | 6.8<br>6.14 |
| E | 2 | 356N6930D | ブラケット | Bracket | 1 | | | 6.8 |
| D | 3 | 327N1122415 | 平歯車 | Spur Gear | 1 | | | 6.8 |
| D | 4 | 322SY121 | すべり軸受 | Plain Bearing | 2 | | | 6.8 |
| D | 5 | 322SY122 | すべり軸受 | Plain Bearing | 2 | | | 6.8 |
| E | 6 | 356N8470A | ブラケット | Bracket | 1 | | | 6.8 |
| E | 7 | 319N3620B | 軸 | Shaft | 1 | | | 6.16 |
| E | 8 | 358N0164C | ボックス | Box | 1 | | | 6.8 |
| D | 9 | 334N5022A | ブラシローラ | Brush Roller | 1 | | | 6.8 |
| D | 10 | 327N1123202A | 平歯車 | Spur Gear | 1 | | | 6.12 |
| D | 11 | 852N0019A/B | 読取部 | Bar Code Reader | 1 | | | |
| E | 12 | 356N6839C | ブラケット | Bracket | 1 | | | |
| E | 13 | 313N1081E | ステー | Stay | 1 | | | 6.16 |
| D | 14 | 334N2366B | 樹脂ローラ | Resin Roller | 4 | | | 6.16 |
| D | 15 | 363N2072B | ガイド | Guide | 4 | | | 6.16 |
| E | 16 | 356N8471B | ブラケット | Bracket | 2 | | | |
| E | 17 | 356N8473B | ブラケット | Bracket | 2 | | | |
| E | 18 | 356N6843B | ブラケット | Bracket | 1 | | | |
| D | 19 | 324N3041E | タイミングベルト車 | Timing Belt Pulley | 1 | | | 6.10 |
| D | 20 | 363N2070B | ガイド | Guide | 2 | | | 6.15 |
| D | 21 | 363N2071B | ガイド | Guide | 1 | | | 6.15 |
| D | 22 | 118SX167 | パルスモータ | Stepping Motor | 1 | MB1 | | 6.10 |
| D | 23 | 363N2068C | ガイド板 | Guide plate | 1 | | | 6.10<br>6.13<br>6.14<br>6.17 |
| D | 24 | 363N2241C | ガイド | Guide | 4 | | | 6.17 |
| D | 25 | 113Y1466 | フォトセンサ | Photo Sensor | 1 | SB1 | | |
| E | 26 | 356N6844C | ブラケット | Bracket | 1 | | | |
| E | 27 | 356N6847C | ブラケット | Bracket | 1 | | | |
| E | 28 | 356N8472B | ブラケット | Bracket | 1 | | | 6.14 |
| D | 29 | 363N2244B | ガイド | Guide | 1 | | | 6.14 |
| E | 30 | 313N1083D | ステー | Stay | 1 | | | 6.1 |
| E | 31 | 316S1037 | ブッシュ | Bushing | 4 | | | |

# 04C 消去搬送部 3
# ERASURE CONVEYOR 3



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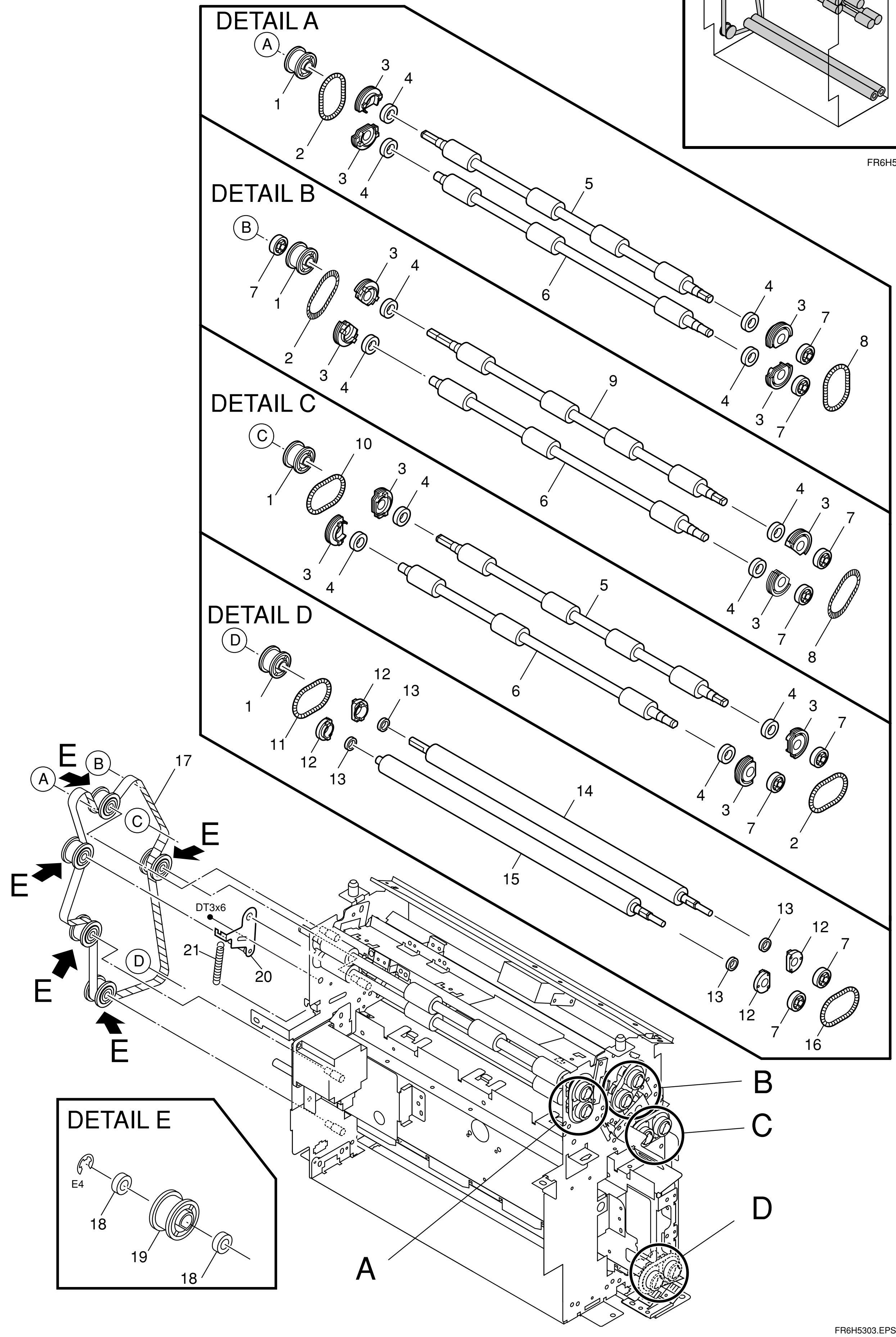
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FR6H5303.EPS

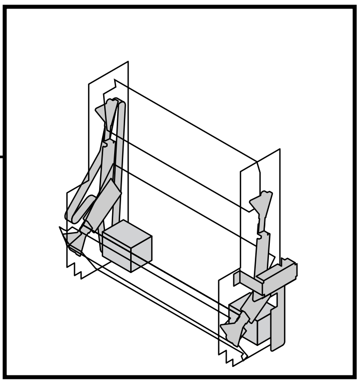
# 消去搬送部 3
# ERASURE CONVEYOR 3
# 04C

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 324N3038C | タイミングベルト車 | Timing Belt Pulley | 4 | | | 6.11<br>6.12<br>6.13<br>6.14 |
| D | 2 | 388N2475C | 引張りコイルバネ | Extension Spring | 3 | L≒90mm | | 6.11<br>6.12<br>6.13 |
| D | 3 | 360N0360A | ハウジング | Housing | 12 | | | 6.11<br>6.12<br>6.13 |
| D | 4 | 322SF145 | 軸受 | Bearing | 12 | | | 6.11<br>6.12<br>6.13 |
| D | 5 | 334N3507D | ゴムローラ | Rubber Roller | 2 | | | 6.11<br>6.13 |
| D | 6 | 334N3508C | ゴムローラ | Rubber Roller | 3 | | | 6.11<br>6.12<br>6.13 |
| D | 7 | 327N1121608A | 平歯車 | Spur Gear | 9 | | | 6.11<br>6.12<br>6.13<br>6.14 |
| D | 8 | 388N2484C | 引張りコイルバネ | Extension Spring | 2 | L≒101mm | | 6.11<br>6.12 |
| D | 9 | 334N3512D | ゴムローラ | Rubber Roller | 1 | | | 6.12 |
| D | 10 | 388N2476C | 引張りコイルバネ | Extension Spring | 1 | L≒102mm | | 6.13 |
| D | 11 | 388N2498A | 引張りコイルバネ | Extension Spring | 1 | L≒91mm | | 6.14 |
| D | 12 | 360N0364A | ハウジング | Housing | 4 | | | 6.14 |
| D | 13 | 322SF157 | 軸受 | Bearing | 4 | | | 6.14 |
| D | 14 | 334N3509D | ゴムローラ | Rubber Roller | 1 | | | 6.14 |
| D | 15 | 334N3510D | ゴムローラ | Rubber Roller | 1 | | | 6.14 |
| D | 16 | 388N2497A | 引張りコイルバネ | Extension Spring | 1 | L≒78mm | | 6.14 |
| D | 17 | 323S3251 | タイミングベルト | Timing Belt | 1 | | | 6.9 |
| D | 18 | 322SF146 | 軸受 | Bearing | 10 | | | 6.9 |
| D | 19 | 324N1026A | タイミングベルト車 | Timing Belt Pulley | 5 | | | 6.9 |
| E | 20 | 356N6926D | ブラケット | Bracket | 1 | | | 6.9 |
| D | 21 | 388N2493A | 引張りコイルバネ | Extension Spring | 1 | L≒29mm | | 6.9 |

# 05A

## 幅寄搬送部 1

## SIDE-POSITIONING CONVEYOR 1



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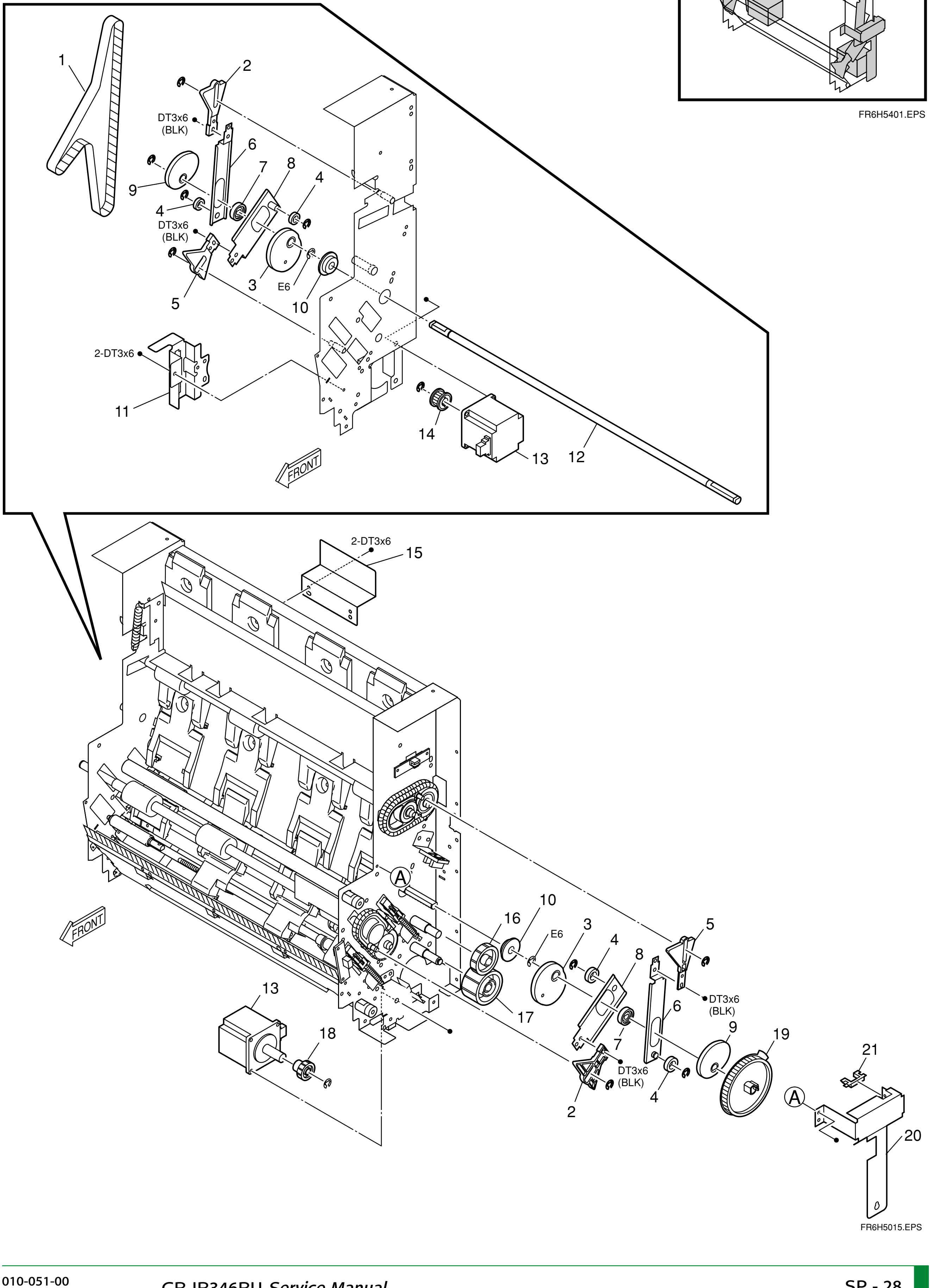

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2
DT3x6
(BLK)
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DT3x6
(BLK)
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11
14
13
12
FRONT
2-DT3x6
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A
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16
E6
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4
5
8
FRONT
13
17
6
DT3x6
(BLK)
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19
18
7
DT3x6
(BLK)
21
4
A
2
20

FR6H5015.EPS

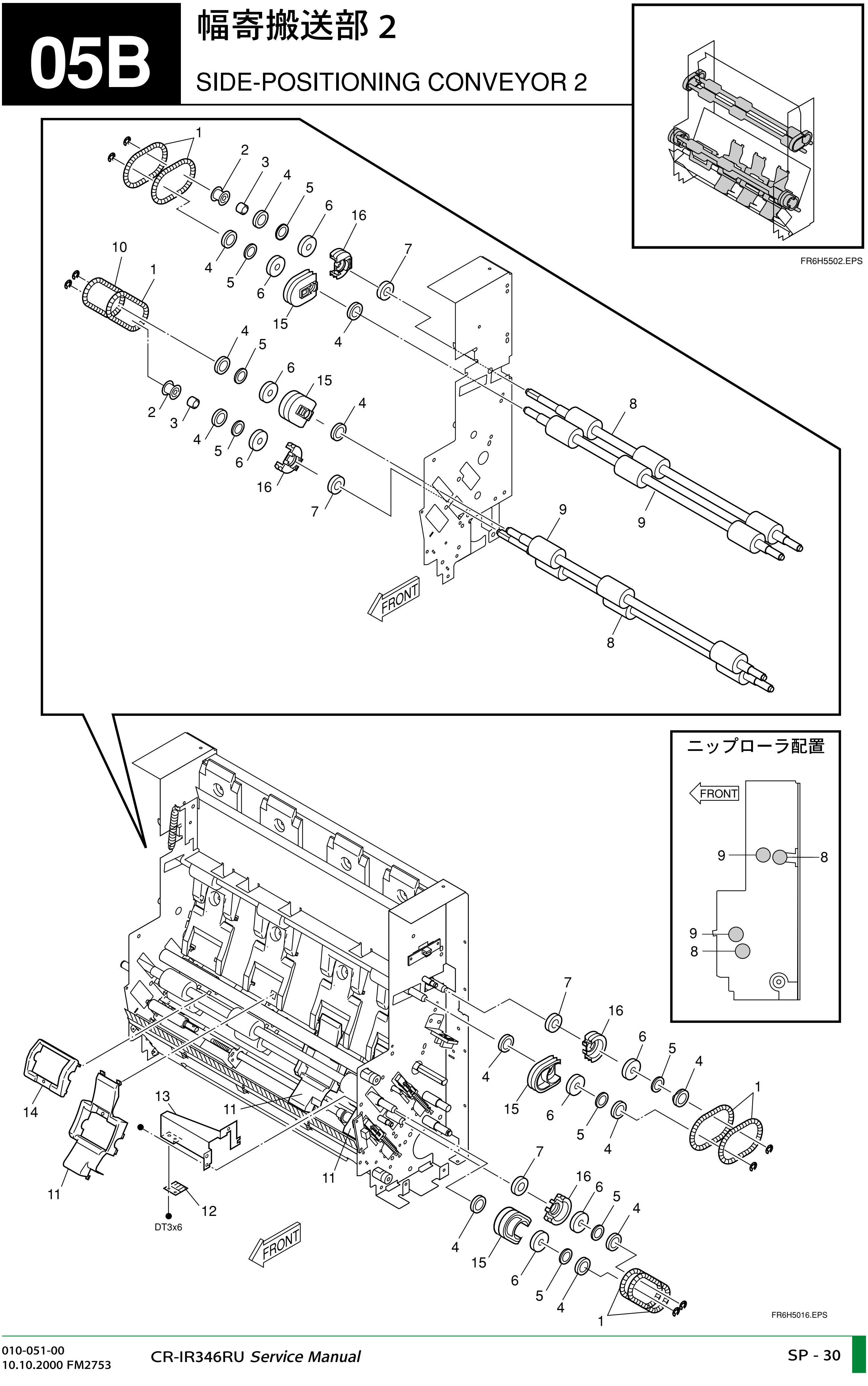
# 幅寄搬送部 1
# SIDE-POSITIONING CONVEYOR 1

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 323S3234 | タイミングベルト | Timing Belt | 1 | | | 7.2 |
| D | 2 | 329N0149A | カム | Cam | 2 | | | 7.3<br>7.4 |
| D | 3 | 329N0146A | カム | Cam | 2 | | | 7.3<br>7.4 |
| D | 4 | 322SF146 | ころがり軸受 | Ball Bearing | 4 | | | 7.3<br>7.4 |
| D | 5 | 329N0148B | カム | Cam | 2 | | | 7.3<br>7.4 |
| E | 6 | 342N0105D | レバー | Lever | 2 | | | 7.3<br>7.4 |
| E | 7 | 347N1625A | スペーサ | Spacer | 2 | | | 7.3<br>7.4 |
| E | 8 | 342N0106B | レバー | Lever | 2 | | | 7.3<br>7.4 |
| D | 9 | 329N0145A | カム | Cam | 2 | | | 7.3<br>7.4 |
| D | 10 | 322SF149 | ころがり軸受 | Ball Bearing | 2 | | | 7.3<br>7.4 |
| E | 11 | 356N8215B | ブラケット | Bracket | 1 | | | 7.9 |
| E | 12 | 319N3625B | 軸 | Shaft | 1 | | | 7.3<br>7.4 |
| D | 13 | 118SX167 | モータ | Motor | 2 | MC2,MC3 | | 7.7<br>7.8 |
| D | 14 | 324N3041E | タイミングベルト車 | Timing Belt Pulley | 1 | | | 7.8 |
| E | 15 | 356N8169B | ブラケット | Bracket | 1 | | | |
| D | 16 | 327S1103002A | 平歯車 | Spur Gear | 1 | | | 7.4 |
| D | 17 | 327N0142A | 平歯車 | Spur Gear | 1 | | | 7.4 |
| D | 18 | 327N0141A | 平歯車 | Spur Gear | 1 | | | 7.7 |
| D | 19 | 327N0143C | 平歯車 | Spur Gear | 1 | | | 7.4 |
| E | 20 | 356N8217C | ブラケット | Bracket | 1 | | | 7.4 |
| E | 21 | 316S1122 | クランプ | Clamp | 1 | | | 7.4 |

# 05B

## 幅寄搬送部 2

## SIDE-POSITIONING CONVEYOR 2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12
13
14
15
16
FRONT
ニップローラ配置
FRONT
9
8
9
8
DT3x6
FR6H5016.EPS

# 幅寄搬送部 2
# SIDE-POSITIONING CONVEYOR 2

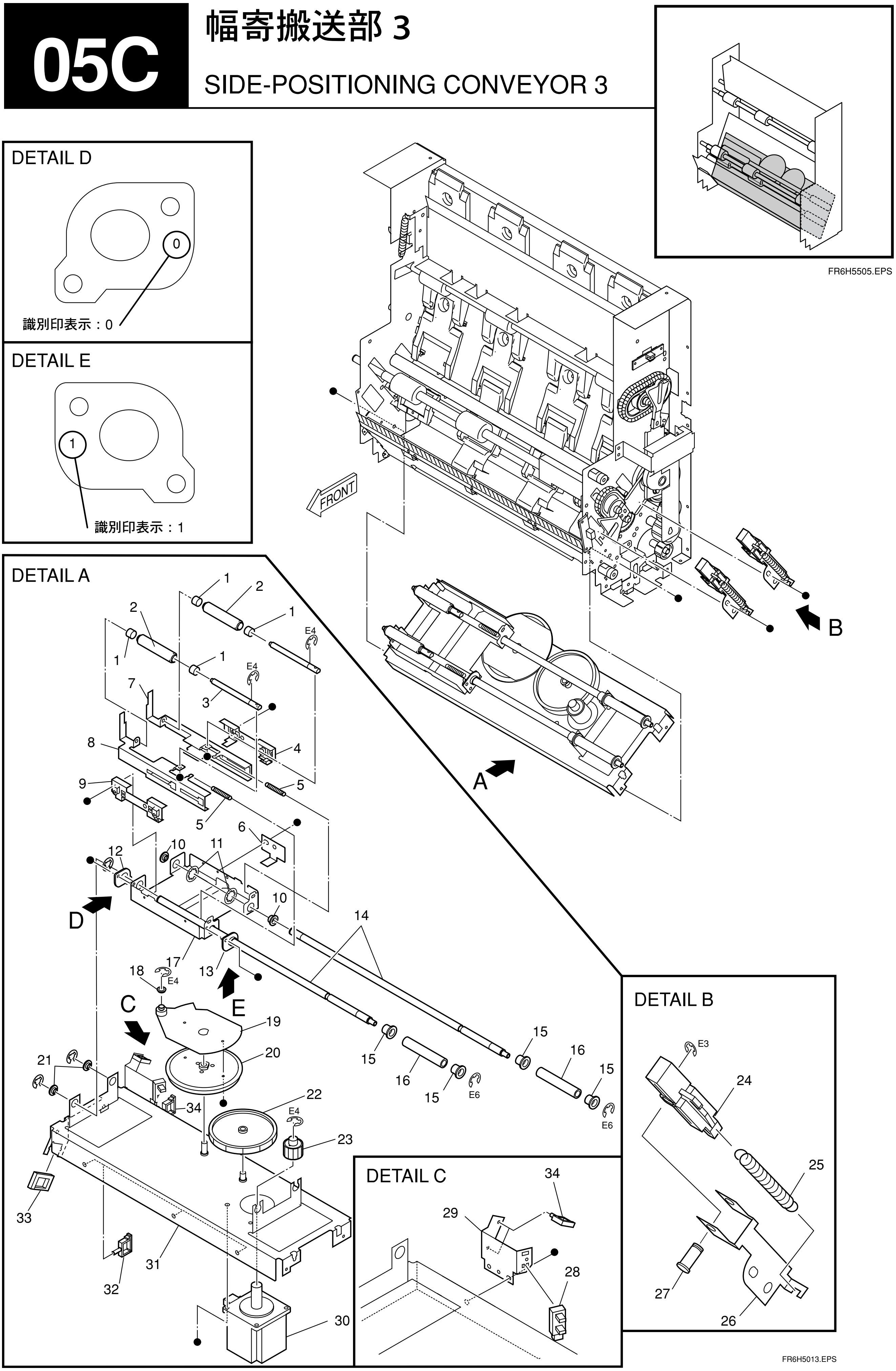
# 05B

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 388N2472B | 引張りコイルバネ | Extension Spring | 7 | L≒160mm | | 7.5<br>7.6 |
| D | 2 | 324N3038C | タイミングベルト車 | Timing Belt Pulley | 2 | | | 7.5<br>7.6 |
| E | 3 | 347N1669A | スペーサ | Spacer | 2 | | | 7.5<br>7.6 |
| D | 4 | 322SF147 | ころがり軸受 | Ball Bearing | 12 | F-W678AZZ1 | | 7.5<br>7.6 |
| E | 5 | 347N1624A | スペーサ | Spacer | 8 | | | 7.5<br>7.6 |
| D | 6 | 322SY233 | ころがり軸受 | Ball Bearing | 8 | 628ZZST | | 7.5<br>7.6 |
| D | 7 | 322SF153 | ころがり軸受 | Ball Bearing | 4 | F-W688AT2ZZ1 | | 7.5<br>7.6 |
| D | 8 | 334N3511C | ゴムローラ | Rubber Roller | 2 | | | 7.5<br>7.6 |
| D | 9 | 334N3524B | ゴムローラ | Rubber Roller | 2 | | | 7.5<br>7.6 |
| D | 10 | 388N2473B | 引張りコイルバネ | Extension Spring | 1 | L≒116mm | | 7.6 |
| D | 11 | 363N2114C | ガイド | Guide | 3 | | | 7.6 |
| D | 12 | 387N0138C | 帯電防止材 | Antistatic Brush | 1 | | | 7.6 |
| E | 13 | 356N8476B | ブラケット | Bracket | 1 | | | 7.6 |
| D | 14 | 363N2110B | ガイド | Guide | 1 | | | 7.6 |
| E | 15 | 318N1065C | ブッシュ | Bushing | 4 | | | 7.5<br>7.6 |
| E | 16 | 318N1066A | ブッシュ | Bushing | 4 | | | 7.5<br>7.6 |

# 05C

# 幅寄搬送部 3

## SIDE-POSITIONING CONVEYOR 3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識別印表示：0
DETAIL E
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識別印表示：1
FRONT
A
B
DETAIL A
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2
1
2
1
E4
1
E4
7
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D
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18
13
E4
C
E
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16
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15
E6
E6
34
22
E4
23
33
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32
30
DETAIL B
E3
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25
27
26
DETAIL C
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29
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FR6H5013.EPS

# 幅寄搬送部 3
# SIDE-POSITIONING CONVEYOR 3

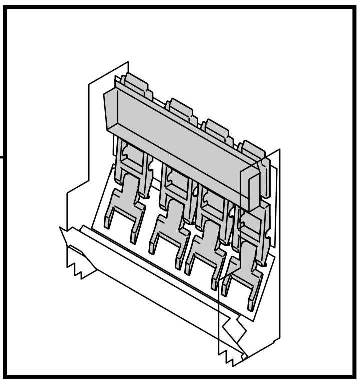
## 05C

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 322SY093 | すべり軸受 | Plain Bearing | 4 | 80B0605 | | 7.9 |
| D | 2 | 334N0041A | ローラ | Roller | 2 | | | 7.9 |
| E | 3 | 319N3624B | 軸 | Shaft | 2 | | | 7.9 |
| D | 4 | 363N2115 | ガイド | Guide | 1 | | | 7.9 |
| D | 5 | 388N2447B | 引張りコイルバネ | Extension Spring | 2 | L≒32mm | | 7.9 |
| E | 6 | 356N8212B | ブラケット | Bracket | 1 | | | 7.9<br>7.10 |
| D | 7 | 328N0041C | 爪 | Claw | 1 | | | 7.9 |
| D | 8 | 328N0042C | 爪 | Claw | 1 | | | 7.9 |
| D | 9 | 363N2073B | ガイド | Guide | 1 | | | 7.9 |
| E | 10 | 322N0052 | 軸受 | Bearing | 2 | | | 7.9 |
| D | 11 | 315S0013 | 止め輪 | Nut | 2 | | | 7.9 |
| D | 12 | 322N0050 | 軸受 | Bearing | 1 | | | 7.9 |
| D | 13 | 322N0051 | 軸受 | Bearing | 1 | | | 7.9 |
| E | 14 | 319N3623B | 軸 | Shaft | 2 | | | 7.9 |
| D | 15 | 322SY063 | 軸受 | Bearing | 4 | 80F-0808 | | 7.9<br>7.10 |
| D | 16 | 388N1156B | 圧縮コイルバネ | Compression Coil Spring | 2 | L≒57mm | | 7.9<br>7.10 |
| E | 17 | 356N6848D | ブラケット | Bracket | 1 | | | 7.9<br>7.10 |
| D | 18 | 322SF148 | ころがり軸受 | Ball Bearing | 1 | FLWA676AT2ZZ1 | | 7.9 |
| E | 19 | 341N0943C | アーム | Arm | 1 | | | 7.9 |
| D | 20 | 327N0140A | 平歯車 | Spur Gear | 1 | | | 7.9 |
| D | 21 | 322SY232 | 軸受 | Bearing | 2 | | | 7.9 |
| D | 22 | 327N0139B | 平歯車 | Spur Gear | 1 | | | 7.9 |
| D | 23 | 327N0138A | 平歯車 | Spur Gear | 1 | | | 7.9 |
| D | 24 | 328N0043C | 爪 | Claw | 2 | | | 7.11 |
| D | 25 | 388N2448A | 引張りコイルバネ | Extension Spring | 2 | L≒36mm | | 7.11 |
| E | 26 | 356N6850C | ブラケット | Bracket | 2 | | | 7.11 |
| E | 27 | 319N3627B | 軸 | Shaft | 2 | | | 7.11 |
| D | 28 | 146S0029 | フォトセンサ | Photo Sensor | 1 | SC1 | | 7.9 |
| E | 29 | 356N6849C | ブラケット | Bracket | 1 | | | 7.9 |
| D | 30 | 118SX164 | モータ | Motor | 1 | MC1 | | 7.9 |
| E | 31 | 355N0550D | フレーム | Frame | 1 | | | 7.9 |
| E | 32 | 316S1037 | ブッシュ | Bushing | 3 | | | 7.9 |
| E | 33 | 318F0174 | コードクランプ | Cord Clamp | 1 | EDS17L | | 7.9 |
| E | 34 | 318S1164 | ブッシュ | Bushing | 3 | | | 7.9 |

# 05D

# 幅寄搬送部 4

## SIDE-POSITIONING CONVEYOR 4



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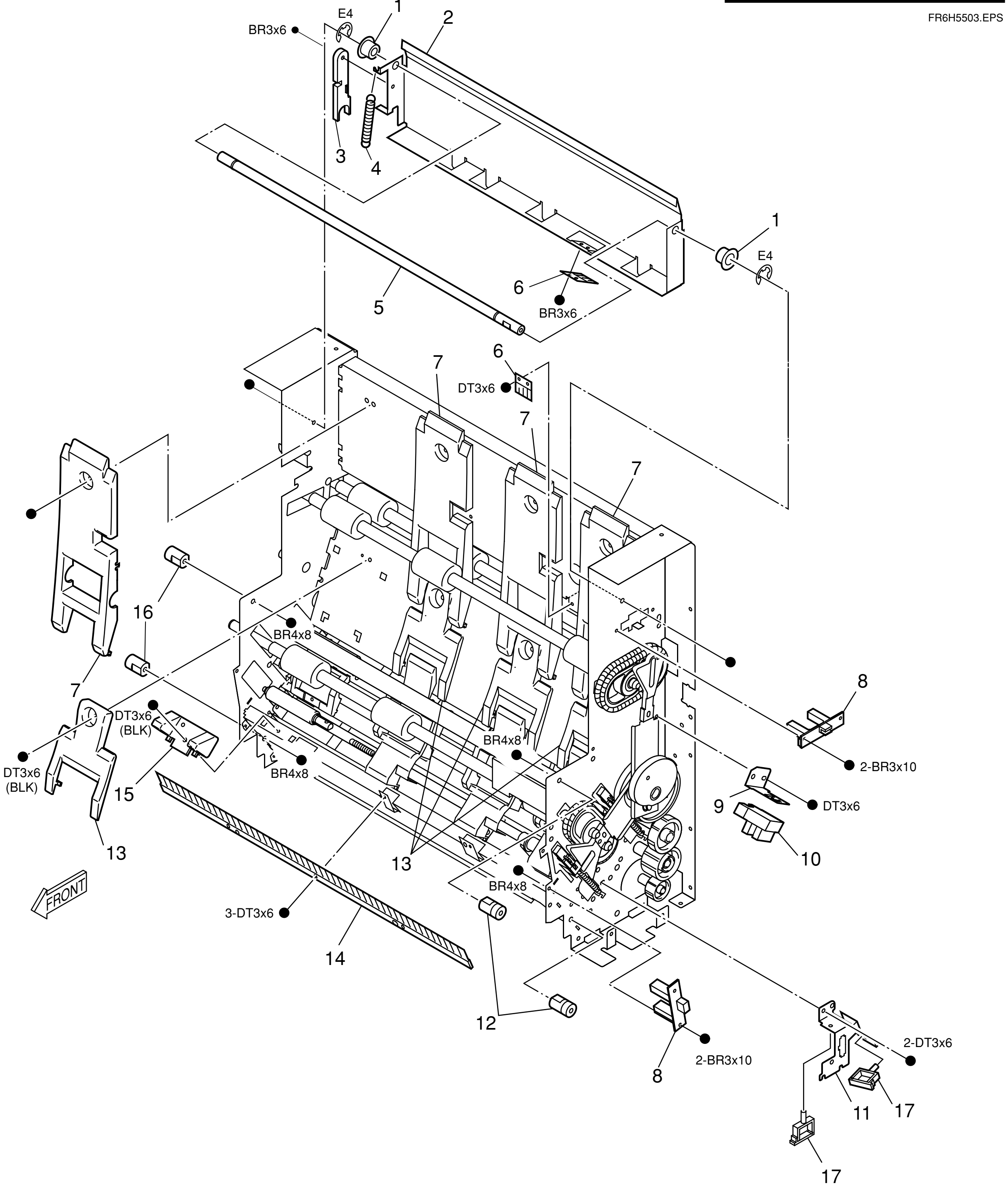
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E4
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BR3x6
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6
DT3x6
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BR4x8
8
7
DT3x6
(BLK)
DT3x6
(BLK)
15
BR4x8
BR4x8
2-BR3x10
9
DT3x6
10
13
13
FRONT
BR4x8
3-DT3x6
14
12
2-BR3x10
8
2-DT3x6
11
17
17

FR6H5017.EPS

# 幅寄搬送部 4
# SIDE-POSITIONING CONVEYOR 4

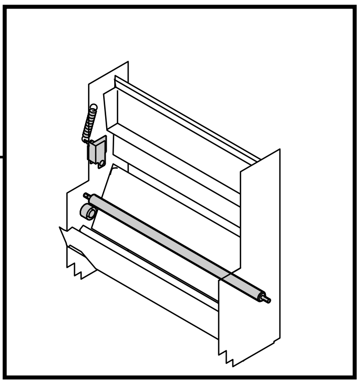
# 05D

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 322SY249 | 軸受 | Bearing | 2 | 80B-0505 | | 7.12 |
| D | 2 | 363N2113D | ガイド | Guide | 1 | | | 7.12 |
| E | 3 | 341N0955B | アーム | Arm | 1 | | | 7.12 |
| D | 4 | 388N2471A | 引張りコイルバネ | Extension Spring | 1 | L≒51mm | | 7.12 |
| E | 5 | 319N3629 | 軸 | Shaft | 1 | | | 7.12 |
| D | 6 | 387N0138C | 帯電防止材 | Antistatic Brush | 2 | | | 7.12 |
| D | 7 | 363N2109C | ガイド | Guide | 4 | | | 7.13 |
| D | 8 | 113Y1466 | フォトセンサ | Photo Sensor | 2 | SC3,SC4 | | 7.1 |
| E | 9 | 356N8213C | ブラケット | Bracket | 1 | | | 7.4 |
| D | 10 | 146S0029 | フォトセンサ | Photo Sensor | 1 | SC2 | | 7.4 |
| E | 11 | 356N8216C | ブラケット | Bracket | 1 | | | 7.1 |
| E | 12 | 313N1085B | ステー | Stay | 2 | | | 7.1 |
| D | 13 | 363N2075B | ガイド | Guide | 4 | | | 7.1 |
| D | 14 | 387N0136B | 帯電防止材 | Antistatic Brush | 1 | | | 7.1 |
| D | 15 | 363N2111B | ガイド | Guide | 1 | | | 7.1 |
| E | 16 | 313N1086B | ステー | Stay | 2 | | | 7.1 |
| E | 17 | 318S1164 | ブッシュ | Bushing | 2 | | | |

# 05E

## 幅寄搬送部 5

## SIDE-POSITIONING CONVEYOR 5



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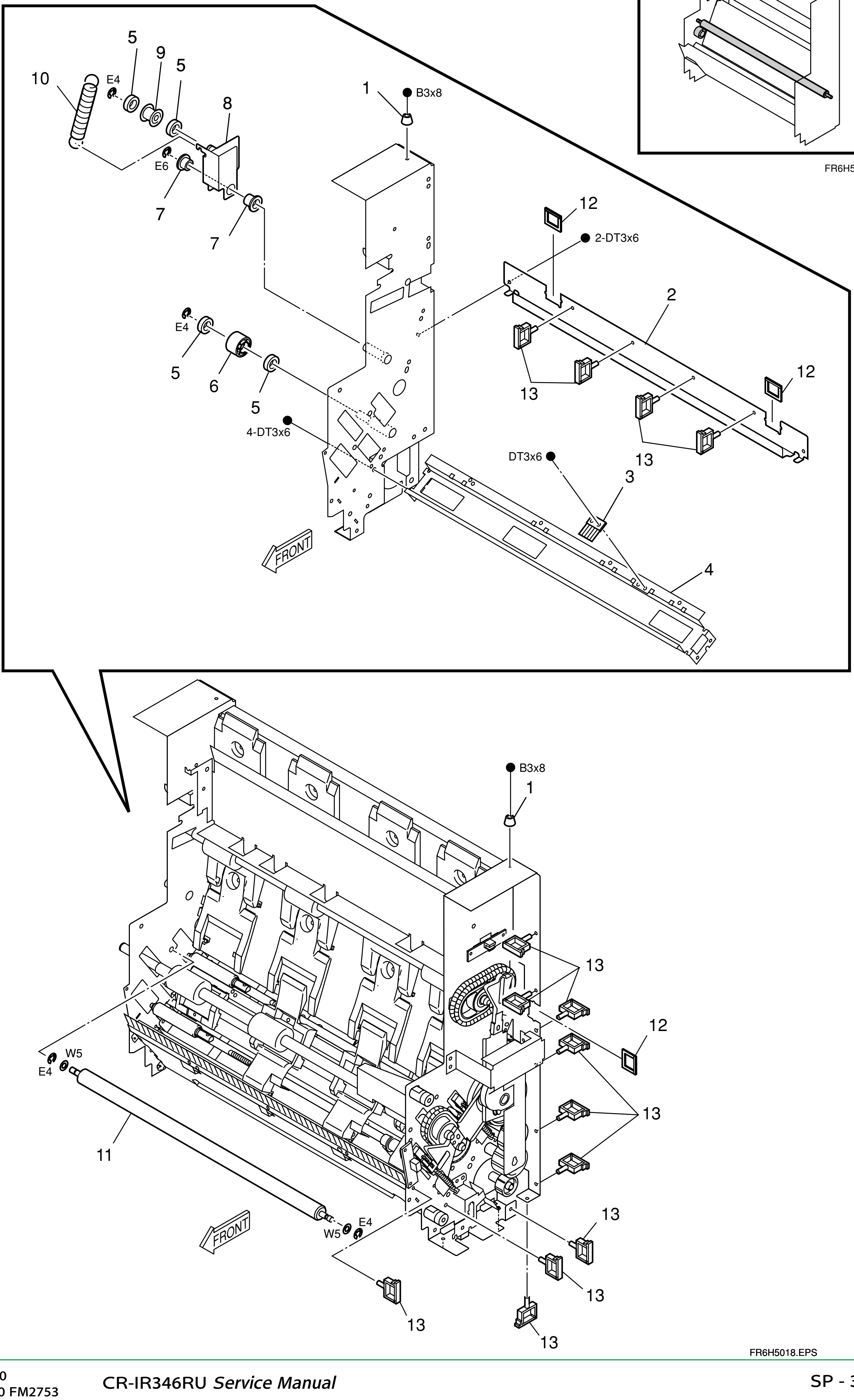

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DT3x6
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3
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FRONT
B3x8
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12
13
W5
E4
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FRONT
E4
W5
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13
13
13

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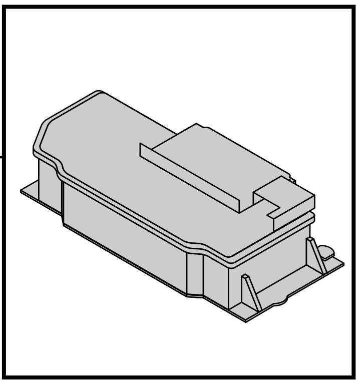
# 幅寄搬送部 5
# SIDE-POSITIONING CONVEYOR 5

## 05E

| RANK | REF. | PART NO. | PART NAME | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|
| E | 1 | 367S0045 | ゴム脚 Rubber Ring | 2 | | | 7.1 |
| E | 2 | 356N8214B | ブラケット Bracket | 1 | | | 7.1 |
| D | 3 | 387N0138C | 帯電防止材 Antistatic Brush | 1 | | | 7.1 |
| E | 4 | 356N8170D | ブラケット Bracket | 1 | | | 7.1 |
| D | 5 | 322SF146 | ころがり軸受 Ball Bearing | 4 | | | 7.2 |
| D | 6 | 324N1032A | 平ベルト車 Flat Belt Wheel | 1 | | | 7.2 |
| D | 7 | 322SY063 | 軸受 Bearing | 2 | 80F-0808 | | 7.2 |
| E | 8 | 341N0944C | アーム Arm | 1 | | | 7.2 |
| D | 9 | 324N1026 | 平ベルト車 Flat Belt Wheel | 1 | | | 7.2 |
| D | 10 | 388N2474A | 引張りコイルバネ Extension Spring | 1 | L≒56mm | | 7.2 |
| D | 11 | 334Y0085 | ローラ Roller | 1 | | | 7.6 |
| E | 12 | 318F0174 | コードクランプ Cord Clamp | 3 | EDS17L | | |
| E | 13 | 318S1164 | ブッシュ Bushing | 14 | | | |

# 06 光学部 SCANNING OPTICS UNIT



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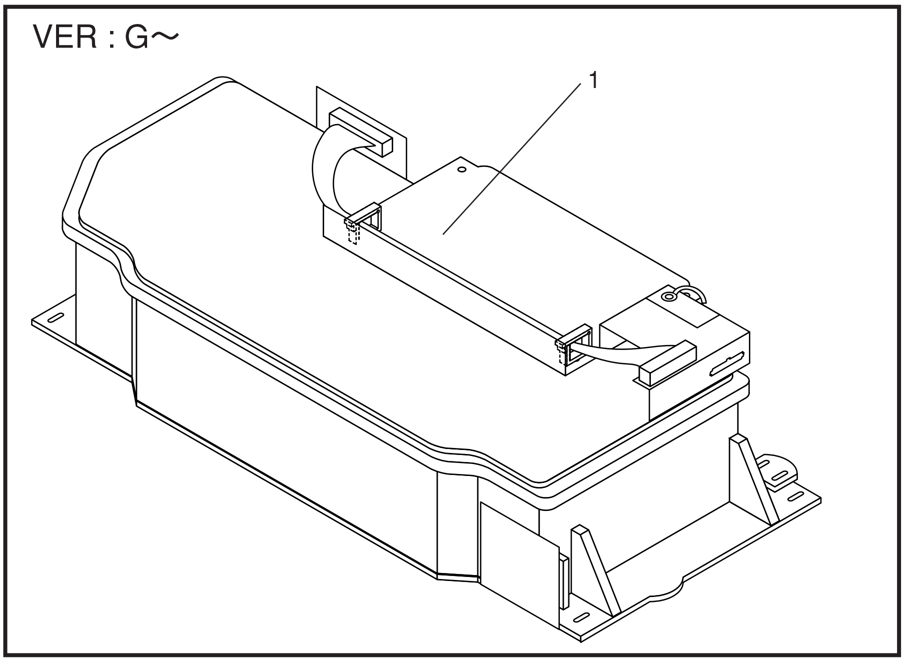
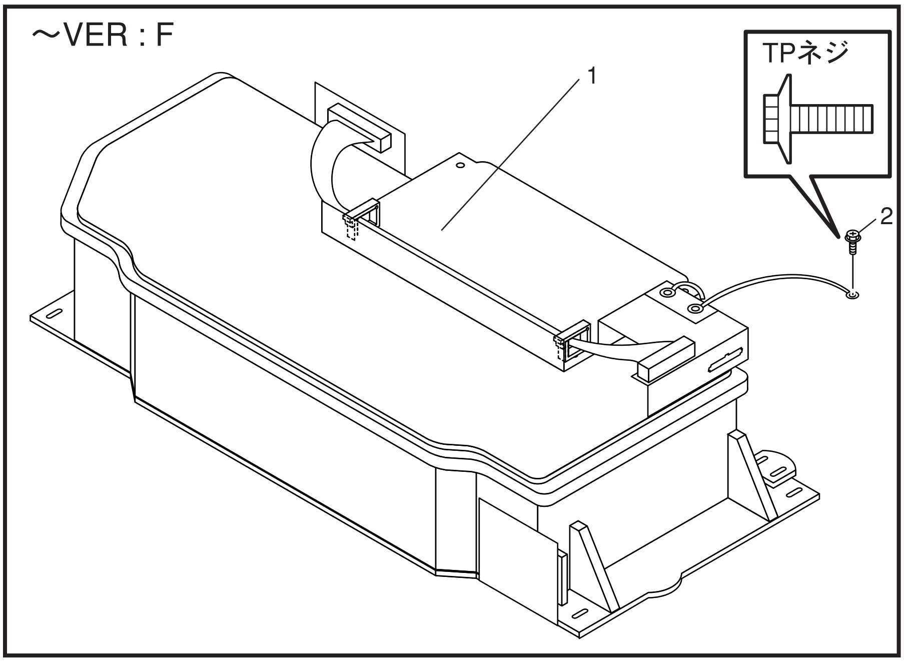




FR6H5501.EPS

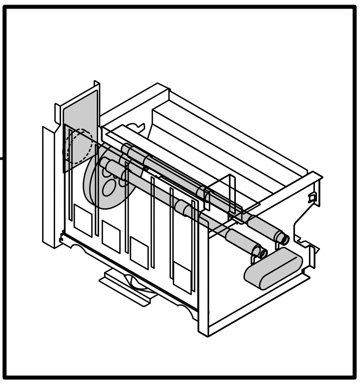
VER : G以降の光学ユニットには、アース線が付いていない。
No ground wire is provided for scanning optics units of VER: G or later.

# 光学部
# SCANNING OPTICS UNIT

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| DR | 1 | 839Y0035F/G/H/J/K | 光学部 | Scanning Optics Unit | 1 | | | 8.1 |
| E | 2 | 308S0062 | 特殊ネジ | Screw | 1 | M4 x 6 | | 8.1 |

# 07A 副走査部 1

# SUBSCANNING UNIT 1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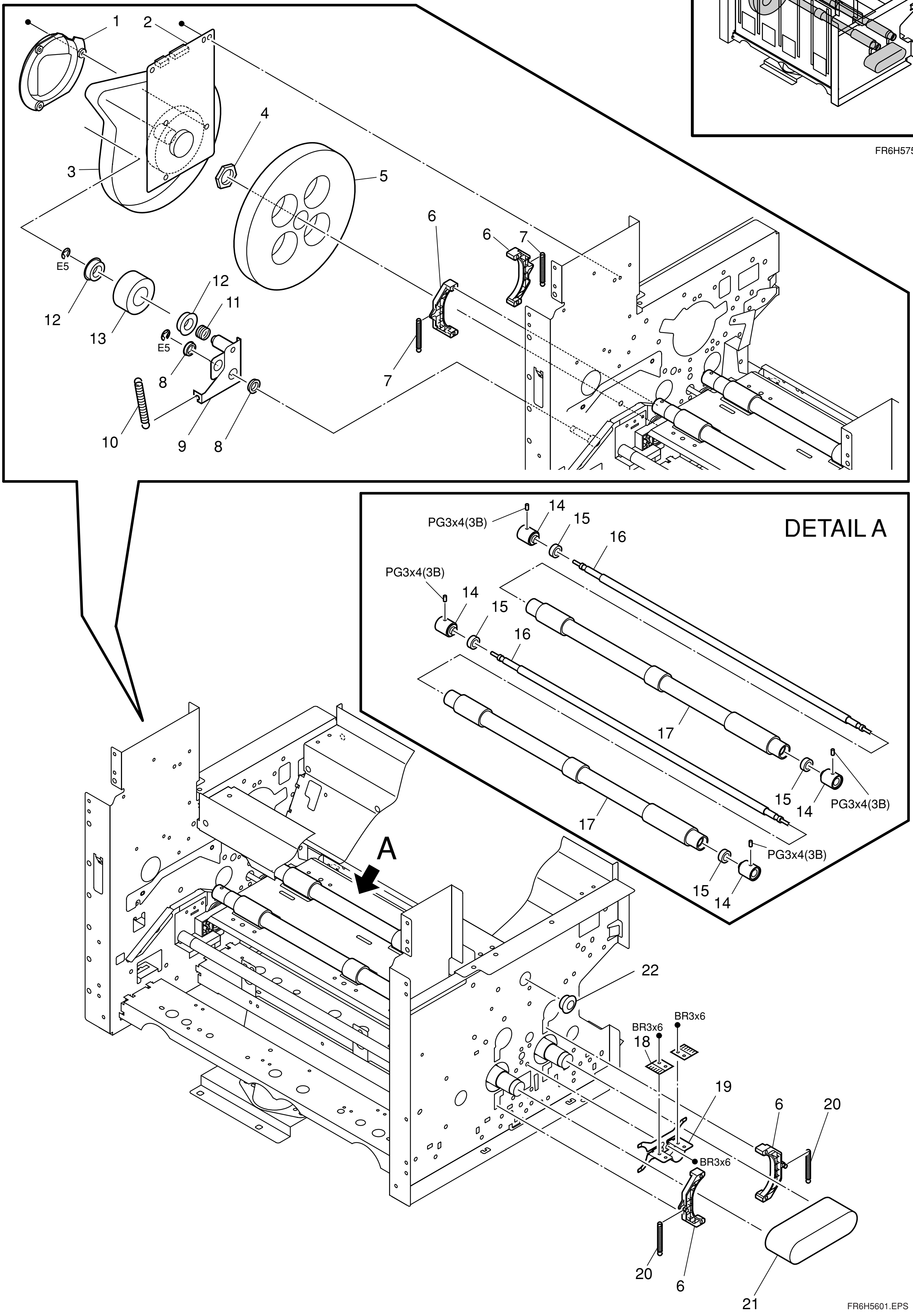

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E5
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E5
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PG3x4(3B)
14
15
16
17
17
15
14
PG3x4(3B)
PG3x4(3B)
15
14
A
22
BR3x6
BR3x6
18
19
6
20
BR3x6
20
6
21

FR6H5601.EPS

# 副走査部 1
# SUBSCANNING UNIT 1
## 07A

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 350N2533A | カバー | Cover | 1 | | | 10.5 |
| D | 2 | 118YX214A | モータ | Motor | 1 | MZ1 | | 10.5 |
| E | 3 | 323N0033 | ベルト | Belt | 1 | | | 10.2 |
| D | 4 | 305S0077 | ナット | Nut | 1 | | | 10.3 |
| D | 5 | 337N0059C | ホイール | Flywheel | 1 | | | 10.3 |
| D | 6 | 343N0039C | フック | Hook | 4 | | | 10.11<br>10.12 |
| D | 7 | 388N2496 | 引張りコイルバネ | Extension Spring | 2 | L≒39mm | | 10.11<br>10.12 |
| D | 8 | 322SF168 | 軸受 | Bearing | 2 | | | 10.2 |
| E | 9 | 341N0968C | アーム | Arm | 1 | | | 10.2 |
| D | 10 | 388N2434A | 引張りコイルバネ | Extension Spring | 1 | | | 10.2<br>10.5 |
| D | 11 | 388N1073 | 圧縮コイルバネ | Compression Coil Spring | 1 | | | 10.2 |
| D | 12 | 322SF149 | 軸受 | Bearing | 2 | | | 10.2 |
| D | 13 | 337N0044 | ホイール | Wheel | 1 | | | 10.2 |
| E | 14 | 319N3618 | 軸 | Shaft | 4 | | | 10.11<br>10.12 |
| D | 15 | 322SF156 | 軸受 | Bearing | 4 | | | 10.11<br>10.12 |
| E | 16 | 319N3598B | 軸 | Shaft | 2 | | | 10.11<br>10.12 |
| D | 17 | 334N3506C | ゴムローラ | Rubber Roller | 2 | | | 10.11<br>10.12 |
| D | 18 | 387N0138C | 帯電防止材 | Antistatic Brush | 2 | | | |
| E | 19 | 401N0777C | 押え板 | Counter Plate | 1 | | | |
| D | 20 | 388N2495 | 引張りコイルバネ | Extension Spring | 2 | L≒50mm | | 10.11<br>10.12 |
| E | 21 | 323N0040 | ベルト | Belt | 1 | | | |
| E | 22 | 318S3060 | ブッシュ | Bushing | 1 | | | |

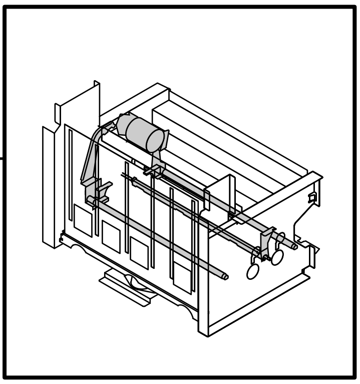
＊参考：（3Ｂ）はネジゆるみ止め接着剤を使用する箇所である。

＊REMARKS：（3B）indicates to use screw locking adhesive.

# 07B

# 副走査部 2

# SUBSCANNING UNIT 2



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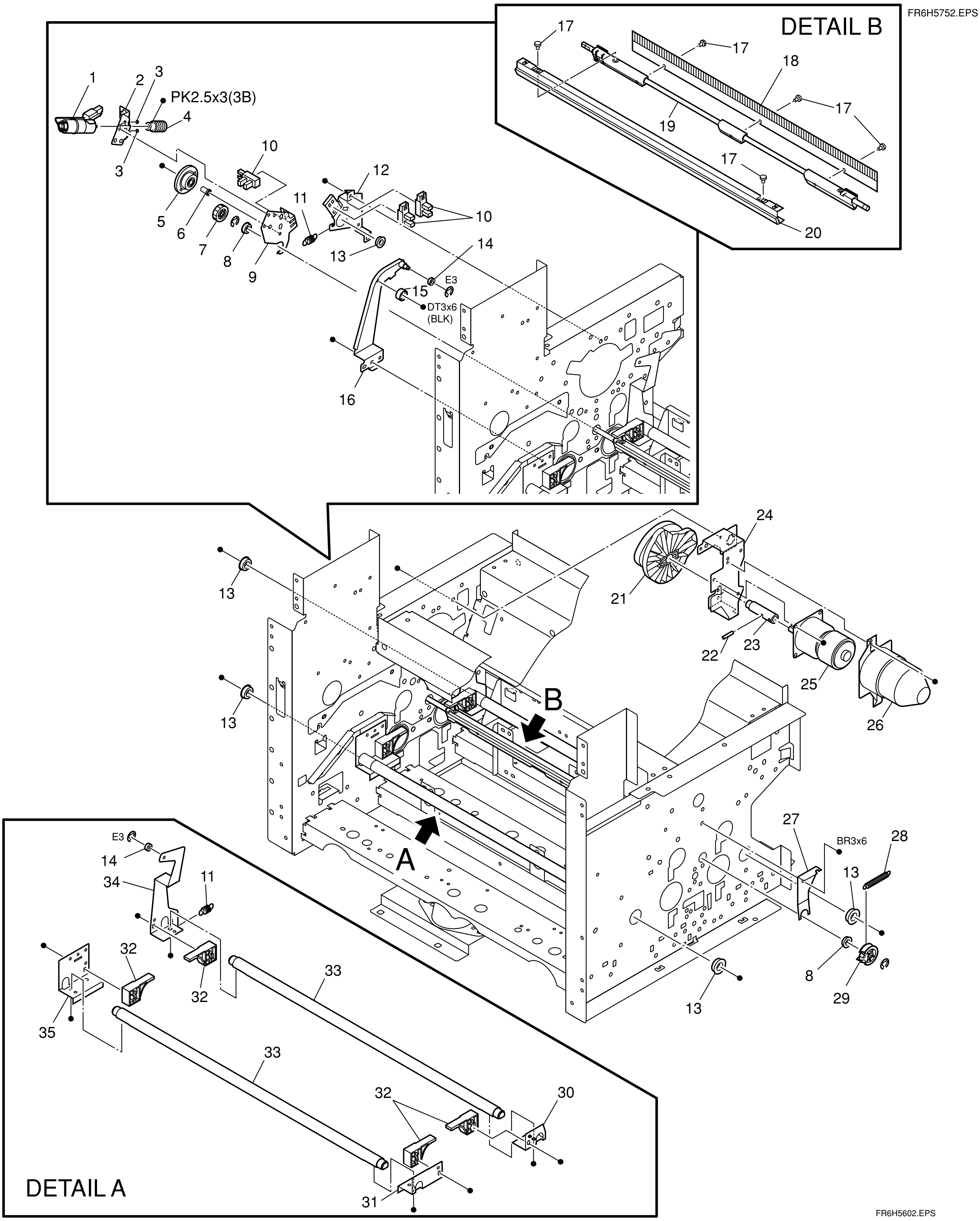
DETAIL B
17
17
18
17
19
17
20
1
2
3
PK2.5x3(3B)
4
3
10
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5
6
11
10
7
8
9
13
14
E3
15
DT3x6
(BLK)
16
24
13
21
22
23
25
13
B
26
27
BR3x6
28
A
13
8
29
13
E3
14
34
11
32
32
33
35
33
32
30
31
DETAIL A

FR6H5602.EPS

# 副走査部 2
# SUBSCANNING UNIT 2

**07B**

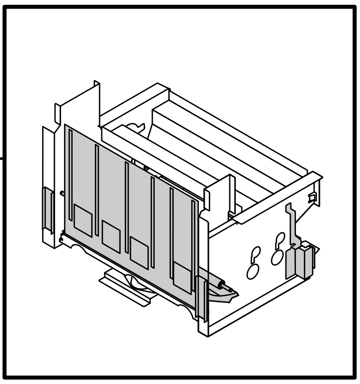
| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| D | 1 | 118YX245 | モータアセンブリ | Motor Assembly | 1 | MZ3 | | 10.7 |
| | 2 | **** | | | | | | |
| | 3 | **** | | | | | | |
| | 4 | **** | | | | | | |
| D | 5 | 327N0135E | 歯車 | Gear | 1 | | | 10.8<br>10.13 |
| E | 6 | 319N3619 | 軸 | Shaft | 1 | | | 10.8<br>10.13 |
| D | 7 | 327N0136B | 歯車 | Gear | 1 | | | 10.8<br>10.13 |
| D | 8 | 322SF155 | 軸受 | Bearing | 2 | | | 10.8<br>10.13<br>10.14 |
| D | 9 | 360N0362D | ハウジング | Housing | 1 | | | 10.8 |
| D | 10 | 146S0029 | フォトセンサ | Photo Sensor | 3 | SZ2,SZ3,SZ5 | | 10.6<br>10.8 |
| D | 11 | 388N2477 | 引張りコイルバネ | Extension Spring | 2 | | | 10.6 |
| E | 12 | 356N6819C | ブラケット | Bracket | 1 | | | 10.6 |
| D | 13 | 322SF149 | 軸受 | Bearing | 5 | | | 10.9<br>10.10 |
| D | 14 | 322SF154 | 軸受 | Bearing | 2 | | | 10.9<br>10.10 |
| E | 15 | 347N1700B | スペーサ | Spacer | 1 | | | 10.9<br>10.10 |
| E | 16 | 341N0934C | アーム | Arm | 1 | | | 10.9<br>10.10 |
| E | 17 | 301S4990306 | 十字穴付き小ネジ | Cross-recessed Screw | 5 | | | 10.13<br>10.14 |
| D | 18 | 387N0119C | 帯電防止材 | Antistatic Brush | 1 | | | 10.13<br>10.14 |
| E | 19 | 319N3599G | 軸 | Shaft | 1 | | | 10.13<br>10.14 |
| D | 20 | 602Y0123 | ミラーアセンブリ | Mirror Assembly | 1 | | | 10.13<br>10.14 |
| D | 21 | 329N0144C | カム | Cam | 1 | | | 10.6 |
| E | 22 | 310S8002516 | スプリングピン | Pin | 1 | | | 10.6 |
| E | 23 | 319N3616B | 軸 | Shaft | 1 | | | 10.6 |
| E | 24 | 356N6820E | ブラケット | Bracket | 1 | | | 10.6 |
| D | 25 | 118YX216B | モータ | Motor | 1 | MZ2 | | 10.6 |
| E | 26 | 350N2534 | カバー | Cover | 1 | | | 10.6 |
| E | 27 | 356N6871B | ブラケット | Bracket | 1 | | | 10.14 |
| D | 28 | 388N2435 | 引張りコイルバネ | Extension Spring | 1 | | | 10.13 |
| D | 29 | 363N2060C | ガイド | Guide | 1 | | | 10.13<br>10.14 |
| E | 30 | 341N0942B | アーム | Arm | 1 | | | 10.10 |
| E | 31 | 341N0941B | アーム | Arm | 1 | | | 10.9 |
| E | 32 | 344N0002B | フォーク | Fork | 4 | | | 10.9<br>10.10 |
| E | 33 | 319N3600B | 軸 | Shaft | 2 | | | 10.9<br>10.10 |
| E | 34 | 341N0935D | アーム | Arm | 1 | | | 10.10 |
| E | 35 | 356N6836B | ブラケット | Bracket | 1 | | | 10.9 |

＊参考：（3Ｂ）はゆるみ止め接着剤を使用する箇所である。

＊REMARKS：（3B）indicates to use screw locking adhesive.

# 07C

# 副走査部 3
# SUBSCANNING UNIT 3



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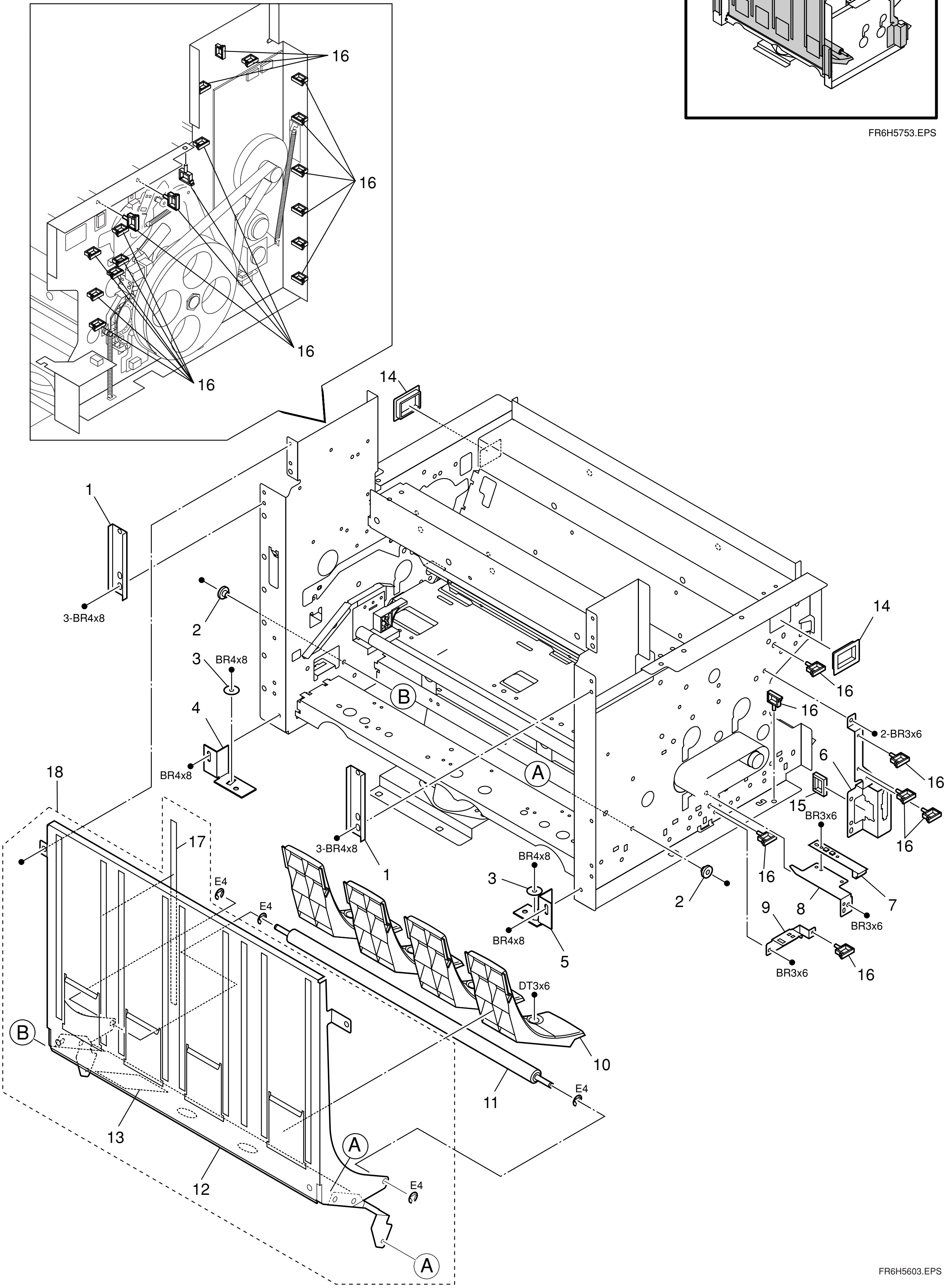

16
16
16
16
14
1
3-BR4x8
2
3
BR4x8
4
BR4x8
18
17
E4
E4
3-BR4x8
1
B
A
BR4x8
3
BR4x8
5
DT3x6
10
11
E4
B
13
12
A
E4
A
14
16
16
2-BR3x6
6
16
15
BR3x6
16
16
2
16
9
8
7
BR3x6
BR3x6
16

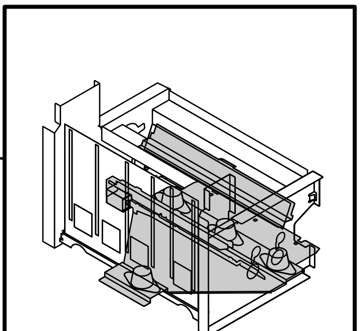
FR6H5603.EPS

# 副走査部 3
# SUBSCANNING UNIT 3

## 07C

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 356N8121A | ブラケット | Bracket | 2 | | | |
| E | 2 | 347N1730 | スペーサ | Spacer | 2 | | | 9.1<br>10.9 |
| D | 3 | 309N0080 | 座金 | Washer | 2 | | | 10.1 |
| E | 4 | 356N8123A | ブラケット | Bracket | 1 | | | 10.1 |
| E | 5 | 356N8122A | ブラケット | Bracket | 1 | | | 10.1 |
| E | 6 | 356N6834B | ブラケット | Bracket | 1 | | | |
| D | 7 | 113Y1457C | ボードアセンブリ | Board Assembly | 1 | SED12A | | |
| E | 8 | 356N6837B | ブラケット | Bracket | 1 | | | |
| E | 9 | 356N8126B | ブラケット | Bracket | 1 | | | |
| D | 10 | 363N2057C | ガイド | Guide | 4 | | | 9.1<br>10.9 |
| D | 11 | 334Y0084 | ローラ | Roller | 1 | | | 9.1<br>10.9 |
| D | 12 | 363N2056F | ガイド | Guide | 1 | | | 9.1<br>10.9 |
| E | 13 | 405N2670 | 銘板 | Label | 1 | | | 9.1<br>10.9 |
| E | 14 | 318F0145 | ブッシュ | Bushing | 2 | | | |
| E | 15 | 318F0174 | コードクランプ | Cord Clamp | 1 | EDS17L | | |
| E | 16 | 318S1164 | ブッシュ | Bushing | 25 | | | |
| D | 17 | 363N2346A | ガイド | Guide | 9 | | #20061~ | |
| D | 18 | 363Y0408 | ガイドアセンブリ | Guide Assembly | 1 | Without REF.13 | | 9.1<br>10.1 |

# 07D 副走査部 4
# SUBSCANNING UNIT 4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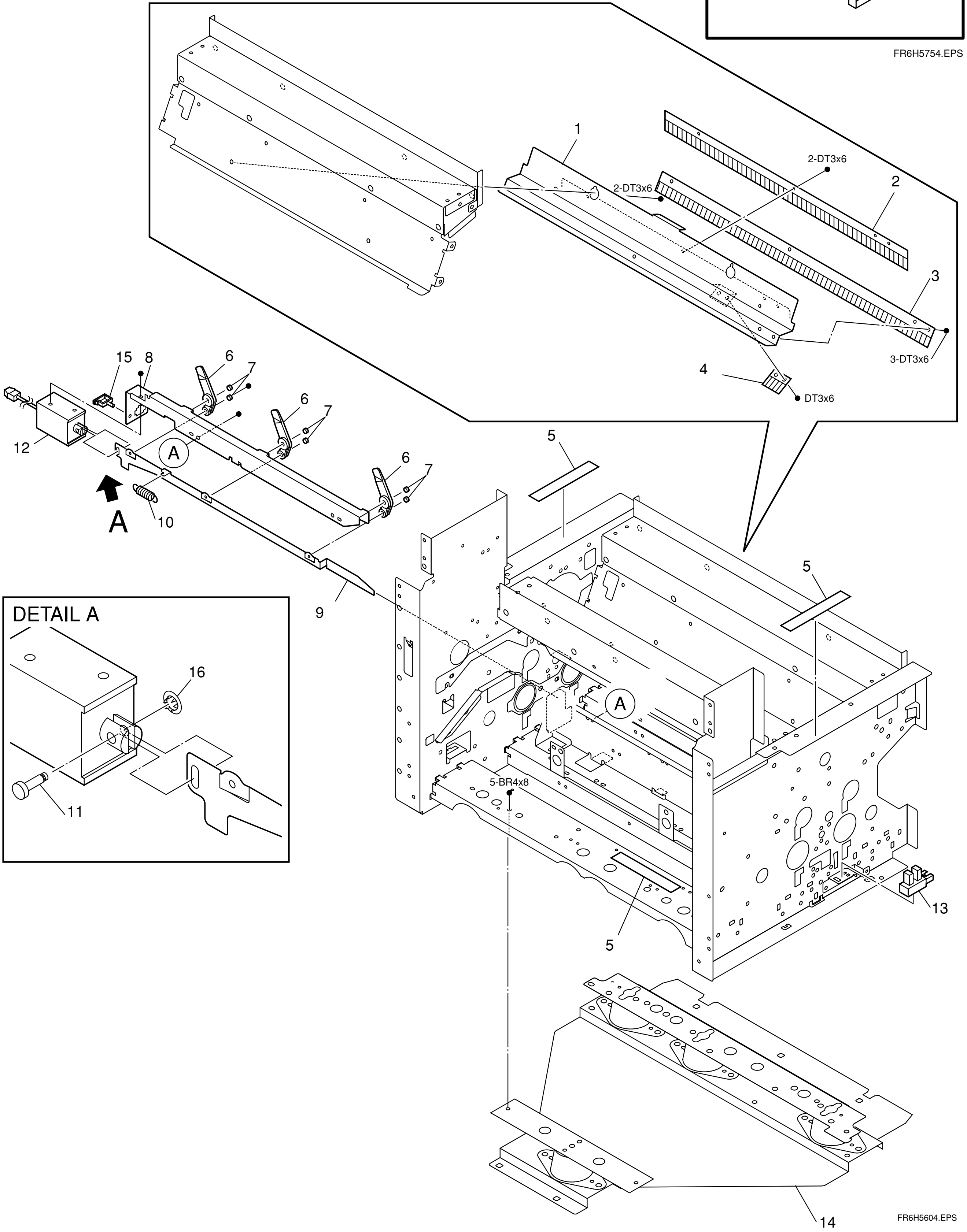
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2-DT3x6
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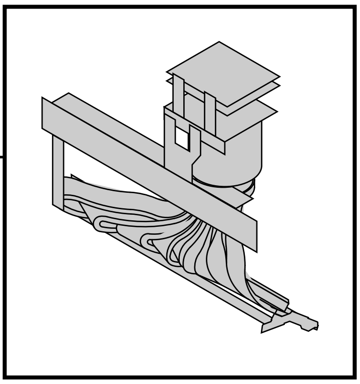
DT3x6
15
8
6
7
6
7
6
7
12
A
A
10
5
5
9
DETAIL A
16
11
A
5-BR4x8
13
5
14
FR6H5604.EPS

# 副走査部 4
# SUBSCANNING UNIT 4

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 356N6813C | ブラケット | Bracket | 1 | | | 10.12 |
| D | 2 | 387N0137C | 帯電防止材 | Antistatic Brush | 1 | | | 10.12 |
| D | 3 | 387N0120C | 帯電防止材 | Antistatic Brush | 1 | | | 10.12 |
| D | 4 | 387N0138C | 帯電防止材 | Antistatic Brush | 1 | | | 10.12 |
| E | 5 | 405N1770A | 銘板 | Label | 3 | | | |
| E | 6 | 341N0933B | アーム | Arm | 3 | | | 10.4 |
| E | 7 | 347N1731A | スペーサ | Spacer | 6 | | | 10.4 |
| E | 8 | 356N6833F | ブラケット | Bracket | 1 | | | 10.4 |
| E | 9 | 341N0932E | アーム | Arm | 1 | | | 10.4 |
| D | 10 | 388N2436 | 引張りコイルバネ | Extension Spring | 1 | | | 10.4 |
| E | 11 | 319N3890 | 軸 | Shaft | 1 | | | 10.4 |
| D | 12 | 107Y0168 | ソレノイド | Solenoid | 1 | SolZ1 | | 10.4 |
| D | 13 | 146S0029 | フォトセンサ | Photo Sensor | 1 | SZ4 | | |
| D | 14 | 386Y0029 | 防振ゴム | Rubber Vibration Isolator | 1 | | | 10.1 |
| E | 15 | 318S1164 | ブッシュ | Bushing | 1 | | | 10.4 |
| D | 16 | 309S0037 | ワッシャ | Washer | 1 | | | 10.4 |

# 08

# 集光部
# LIGHT-COLLECTING UNIT



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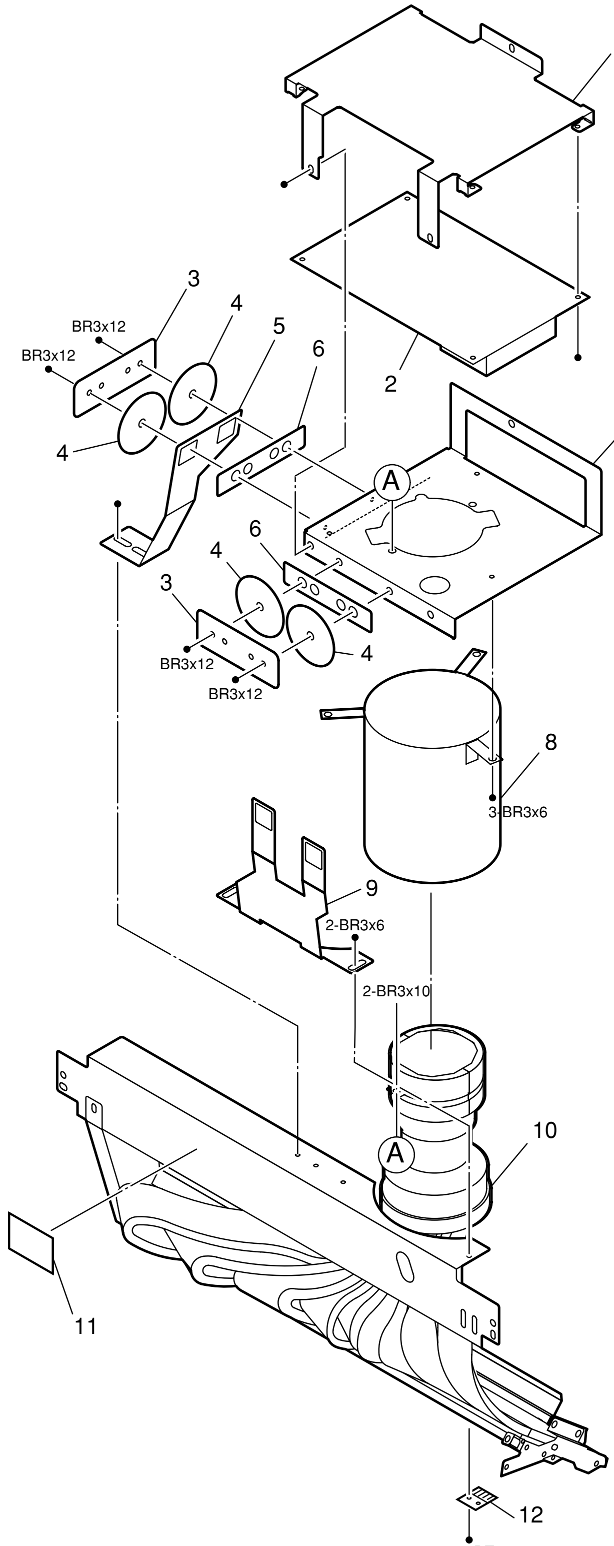
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5
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BR3x12
BR3x12
4
6
4
3
4
BR3x12
BR3x12
8
3-BR3x6
9
2-BR3x6
2-BR3x10
10
A
11
12
DT3x6

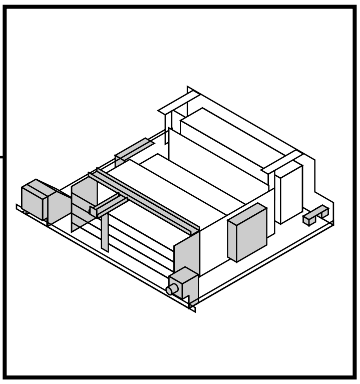
FR6H5701.EPS

# 集光部
# LIGHT-COLLECTING UNIT

# 08

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 345N1419B | シールド材 | Cover | 1 | | | 9.1<br>9.2 |
| C | 2 | 113Y1456C | PMT12A | PMT12A | 1 | | | 9.1<br>9.2 |
| E | 3 | 356N6990A | ブラケット | Bracket | 2 | | | 9.1 |
| E | 4 | 347N1598A | スペーサ | Spacer | 4 | | | 9.1 |
| E | 5 | 356N8389 | ブラケット | Bracket | 1 | | | 9.1 |
| E | 6 | 347N1599 | スペーサ | Spacer | 2 | | | 9.1 |
| E | 7 | 345N1532 | シールド材 | Cover | 1 | | | 9.1 |
| E | 8 | 345N1456B | シールド材 | Cover | 1 | | | 9.1 |
| E | 9 | 356N8388 | ブラケット | Bracket | 1 | | | 9.1 |
| D | 10 | 606Y0055A | 集光ガイドアセンブリ | Light-collecting Guide Assembly | 1 | | | 9.1 |
| E | 11 | 405N0192 | 銘板 | Label | 1 | | | |
| D | 12 | 387N0138C | 帯電防止材 | Antistatic Brush | 1 | | | |

# 09A 制御部 1
# CONTROLLER 1



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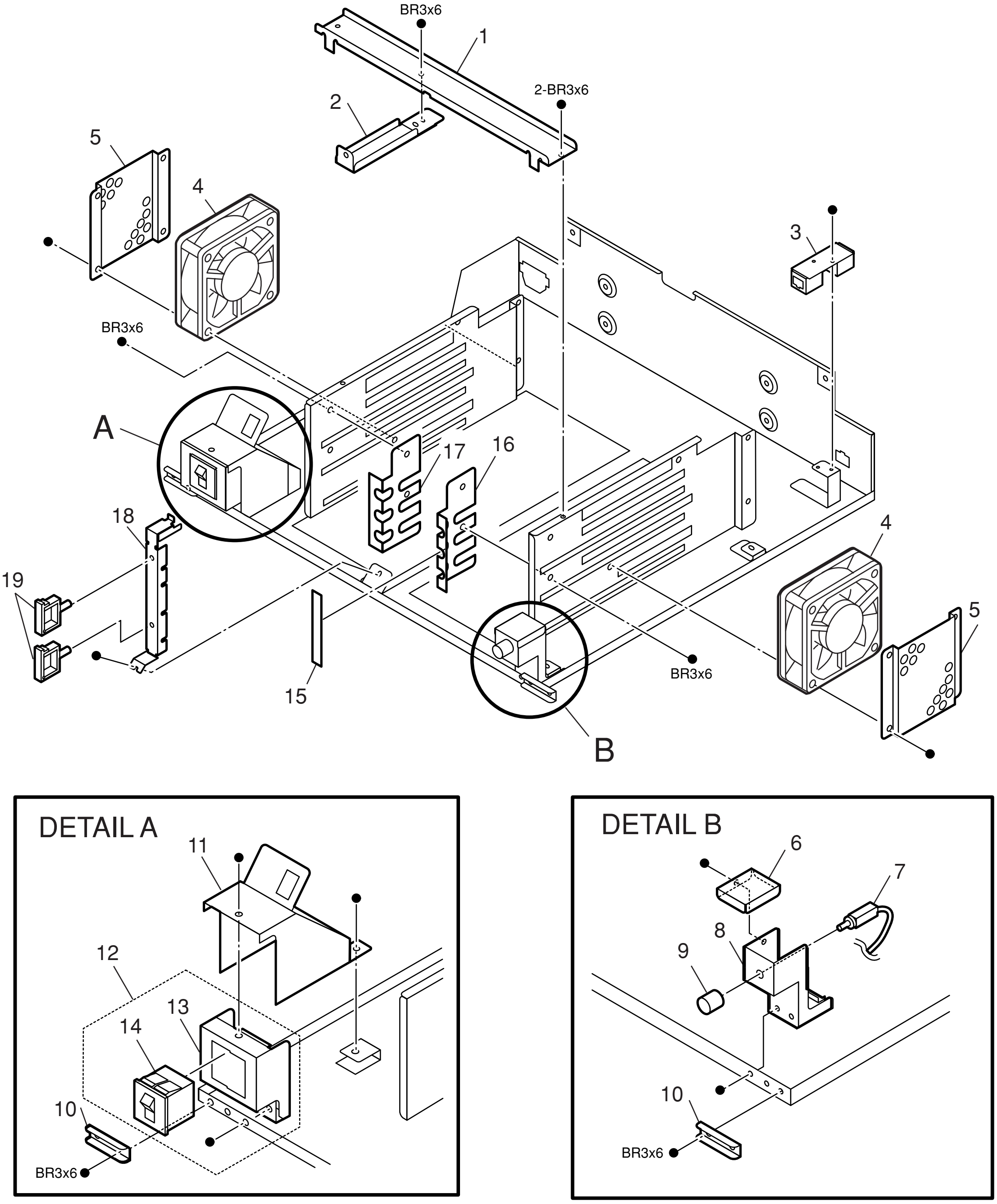
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2-BR3x6
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4
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BR3x6
A
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16
18
19
4
5
15
BR3x6
B
DETAIL A
11
12
13
14
10
BR3x6
DETAIL B
6
7
8
9
10
BR3x6

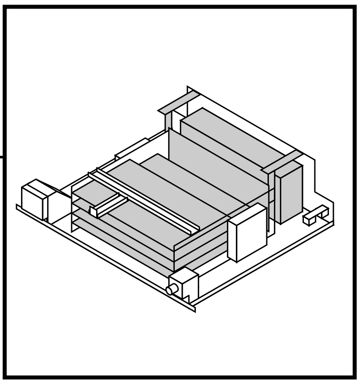
FR6H5A01.EPS

# 制御部 1
# CONTROLLER 1

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| E | 1 | 346N1095C | 補助板 | Plate Support | 1 | | | 11.1 |
| E | 2 | 346N1136B | 補助板 | Plate Support | 1 | | | 11.1 |
| C | 3 | 113Y1470A | CNN12A | CNN12A | 1 | | | 11.10 |
| D | 4 | 119S0008 | ファン | Fan | 2 | FAN1,FAN2 | | 11.13 |
| E | 5 | 364N0092C | ガード | Guard | 2 | | | 11.13 |
| E | 6 | 356N8487A | ブラケット | Bracket | 1 | | | 11.9 |
| D | 7 | 128Y0271C | スイッチ | Switch | 1 | | | 11.9 |
| E | 8 | 356N6996C | ブラケット | Bracket | 1 | | | 11.9 |
| D | 9 | 340N0171C | キートップ | Key Top | 1 | | | 11.9 |
| E | 10 | 356N6801D | ブラケット | Bracket | 2 | | | 11.1 |
| E | 11 | 356N6997D | ブラケット | Bracket | 1 | | | 11.12 |
| D | 12 | 128Y0280 | ブレーカ | Breaker | 1 | SER-F-11-61-10A-G | | 11.12 |
| E | 13 | 356N6995C | ブラケット | Bracket | 1 | | | 11.12 |
| D | 14 | 128N0067 | ブレーカ | Breaker | 1 | | | 11.12 |
| E | 15 | 405N2766 | 銘板 | Label | 1 | | | |
| E | 16 | 346N1127B | 補助板 | Plate Support | 1 | | | 11.7 |
| E | 17 | 346N1128B | 補助板 | Plate Support | 1 | | | 11.7 |
| E | 18 | 346N1125B | 補助板 | Plate Support | 1 | | | 11.1 |
| E | 19 | 318F0172 | ブッシュ | Bushing | 2 | LWS-8SL-2.5W | | 11.1 |

# 09B

## 制御部 2
## CONTROLLER 2



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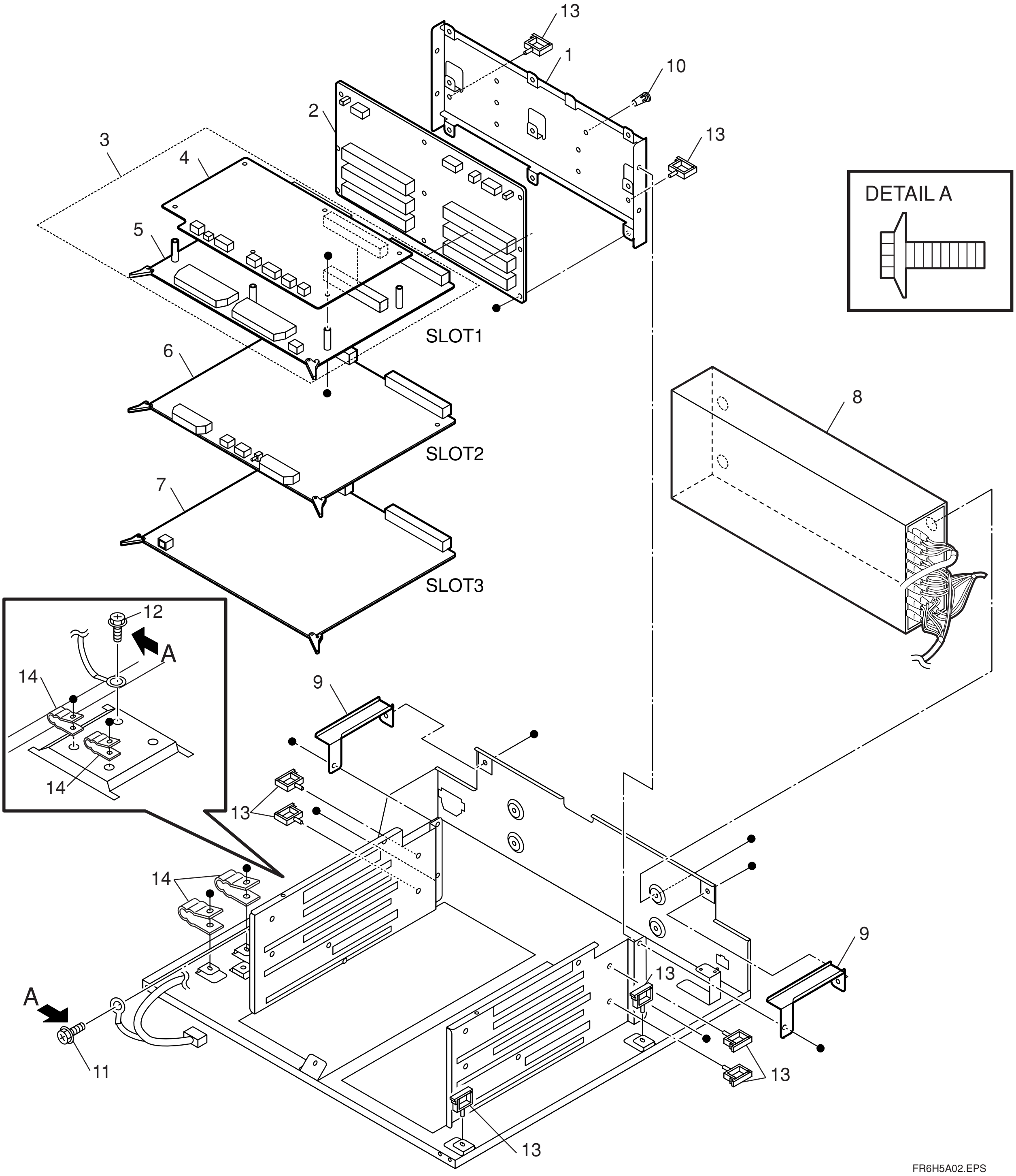
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3
4
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DETAIL A
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SLOT1
6
8
SLOT2
7
SLOT3
12
A
14
9
14
13
14
9
A
13
11
13
13

FR6H5A02.EPS

# 制御部 2
# CONTROLLER 2

# 09B

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | SERIAL NO. | REFER TO |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 352N0458D | パネル | Panel | 1 | | | 11.7 |
| C | 2 | 113Y1450D | MTH12A | MTH12A | 1 | | | 11.7 |
| C | 3 | 113Y1552A | DRV12A-1 | DRV12A-1 | 1 | | | 11.4 |
| C | 4 | 113Y1453D | DRV12A | DRV12A | 1 | | | 11.6 |
| C | 5 | 113Y1452D | SNS12A | SNS12A | 1 | | | 11.5 |
| C | 6 | 113Y1449G/H | SCN12A | SCN12A | 1 | | | 11.3 |
| CR | 7 | 113Y1451H/J | CPU12A | CPU12A | 1 | | | 11.2 |
| CR | 8 | 125Y0062G | 電源 | Power Supply | 1 | With Cable Assembly | | 11.8 |
| E | 9 | 346N1096C | 補助板 | Plate Support | 2 | | | 11.7<br>11.8 |
| E | 10 | 316S0125 | 止め具 | Clamp | 6 | | | 11.7 |
| E | 11 | 308S0051 | 特殊ネジ | Screw | 1 | M3 x 6 | | |
| E | 12 | 308S0062 | 特殊ネジ | Screw | 1 | M4 x 6 | | |
| E | 13 | 318S1174 | ブッシュ | Bushing | 8 | LWS-3S-2W | | |
| E | 14 | 316S1187 | クランプ | Clamp | 4 | | | |
| AT | 15 | 137S2097 | ヒューズ | Fuse | 1 | R452005 5A For MTH12A | | |
| AT | 16 | 137S2096 | ヒューズ | Fuse | 1 | R452004 4A For MTH12A | | |
| AT | 17 | 137S2094 | ヒューズ | Fuse | 1 | R452003 3A For MTH12A<br>DRV12A | | |
| AT | 18 | 137S2092 | ヒューズ | Fuse | 1 | R452002 2A For MTH12A<br>DRV 12A | | |
| AT | 19 | 137S2084 | ヒューズ | Fuse | 1 | R45201.5 1.5A For SCN12A<br>SNS12A | | |
| AT | 20 | 137S2083 | ヒューズ | Fuse | 1 | R452001 1A For SNS12A | | |
| AT | 21 | 137S1220 | ヒューズ | Fuse | 1 | R452001 2A For DRV12A | | |
| AT | 22 | 137S1219 | ヒューズ | Fuse | 1 | R451.500 0.5A For SNS12A | | |
| E | - | 114Y5436002A | CDR | CDR | 1 | | | |

# 10 ケーブル CABLE

| RANK | REF. | PART NO. | PART NAME | | QTY. | REMARKS | CONNECTION DIAGRAM |
|---|---|---|---|---|---|---|---|
| E | 1 | 136N0362 | ケーブル | Cable | 1 | JPN,USA | |
| E | 2 | 136N0363/0376 | ケーブル | Cable | 1 | BSI | |
| E | 3 | 136N0364/0377 | ケーブル | Cable | 1 | CEE | |
| E | 4 | 136N0365 | ケーブル | Cable | 1 | | 3/9 |
| E | 5 | 136Y6773D | ケーブル | Cable | 1 | | 3/9 |
| E | 6 | 136Y6774C | ケーブル | Cable | 1 | | 9/9 |
| E | 7 | 136Y6775E | ケーブル | Cable | 1 | | 9/9 |
| E | 8 | 136Y6776F | ケーブル | Cable | 1 | | 3/9 |
| E | 9 | 136Y6777E | ケーブル | Cable | 1 | | 3/9 |
| E | 10 | 136Y6780F | ケーブル | Cable | 1 | Including Ferrite Bead | 8/9 |
| E | 11 | 136Y6787C | ケーブル | Cable | 1 | | 7/9 |
| E | 12 | 136Y6792D | ケーブル | Cable | 1 | | 8/9 |
| E | 13 | 136Y6793D | ケーブル | Cable | 1 | | 3/9 |
| E | 14 | 136Y6796C | ケーブル | Cable | 1 | | 7/9 |
| E | 15 | 136Y6799E | ケーブル | Cable | 1 | | 7/9 |
| E | 16 | 136Y6805C | ケーブル | Cable | 1 | | 7/9 |
| E | 17 | 136Y6816C | ケーブル | Cable | 1 | | 8/9 |
| E | 18 | 136Y6817D | ケーブル | Cable | 1 | | 8/9 |
| E | 19 | 136N0371 | ケーブル | Cable | 1 | Japan | 3/9 |
| E | 20 | 136Y8545A | ケーブル | Cable | 1 | Japan | 3/9 |

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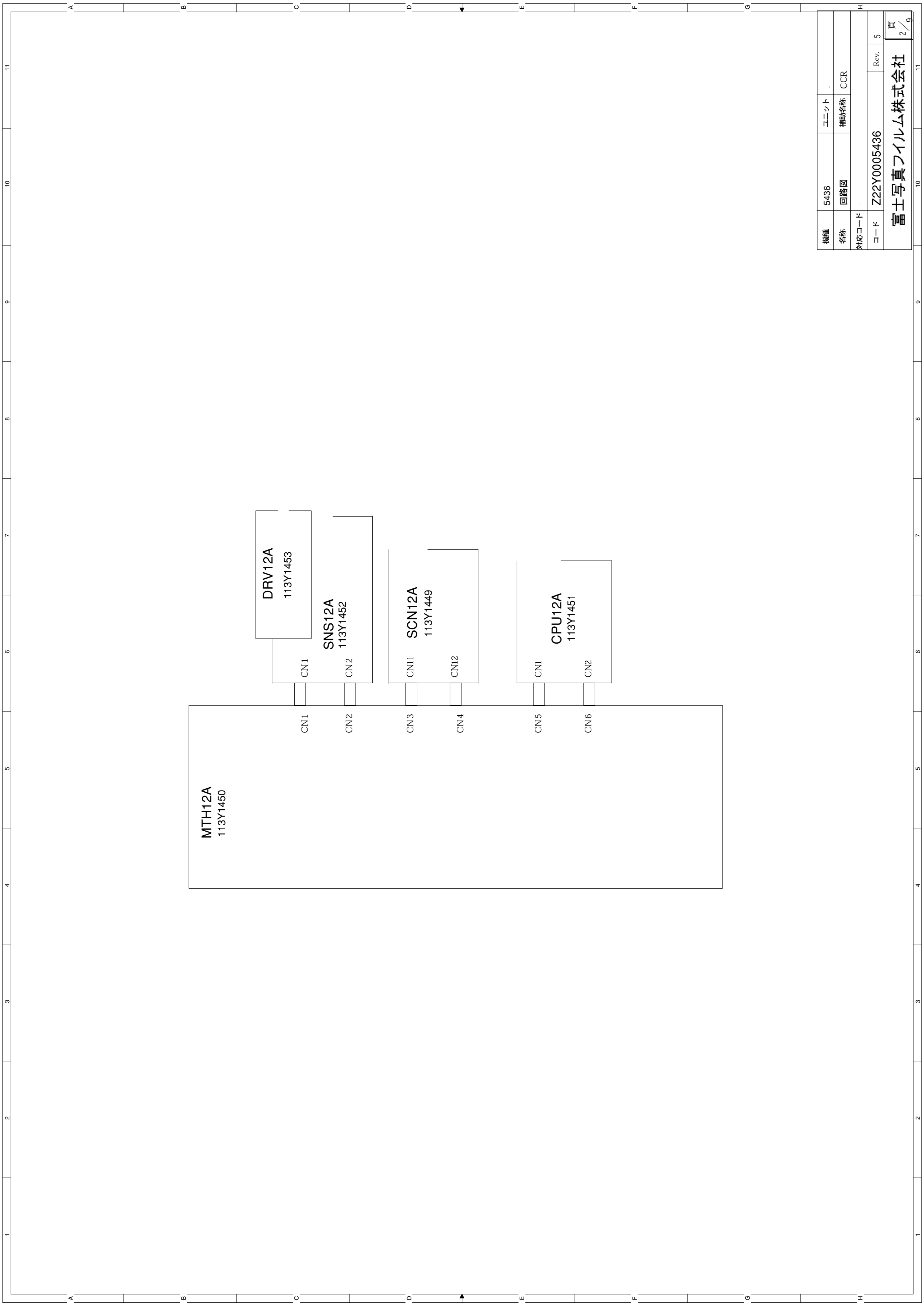
# 11 回路図 CIRCUIT DIAGRAM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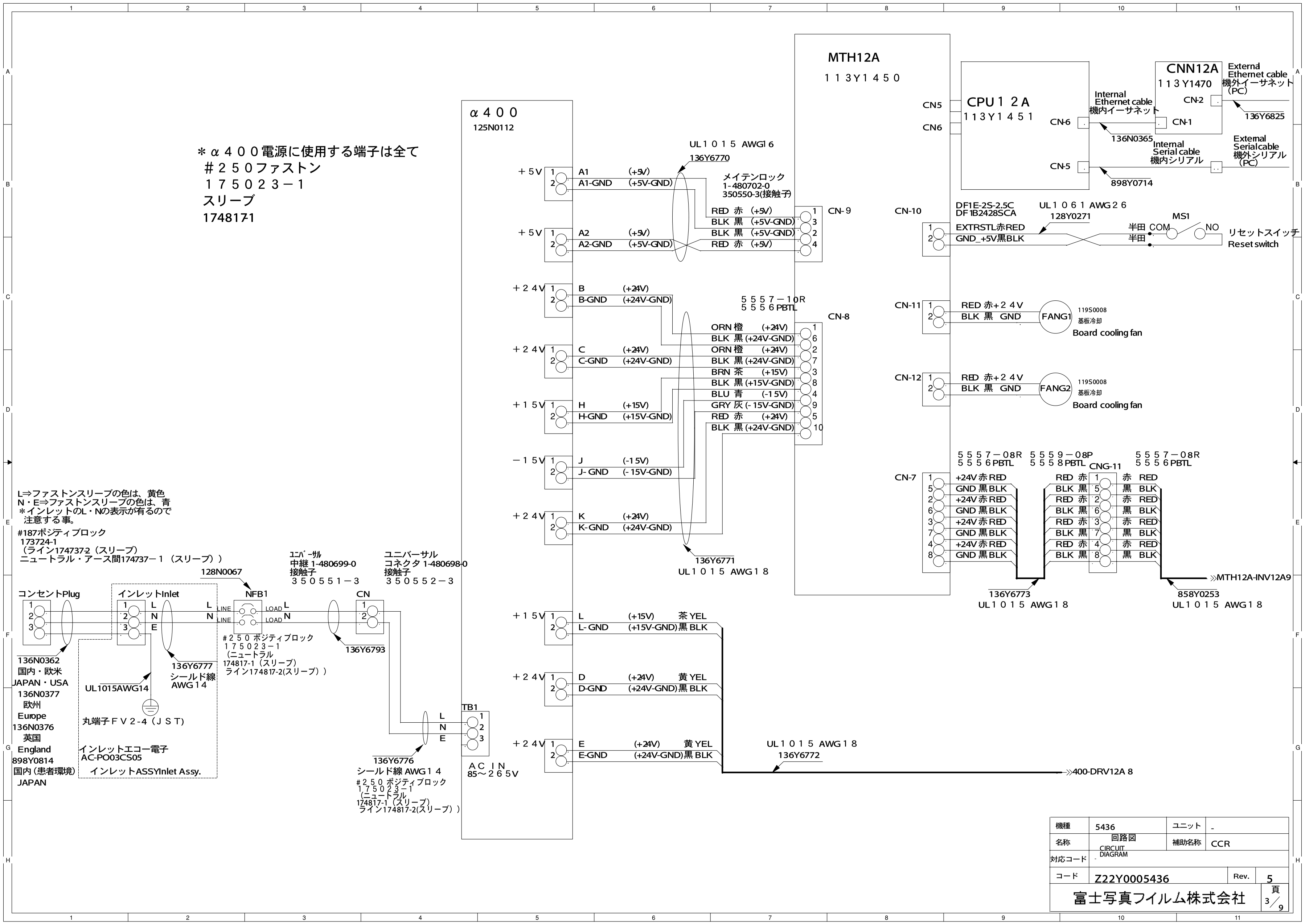
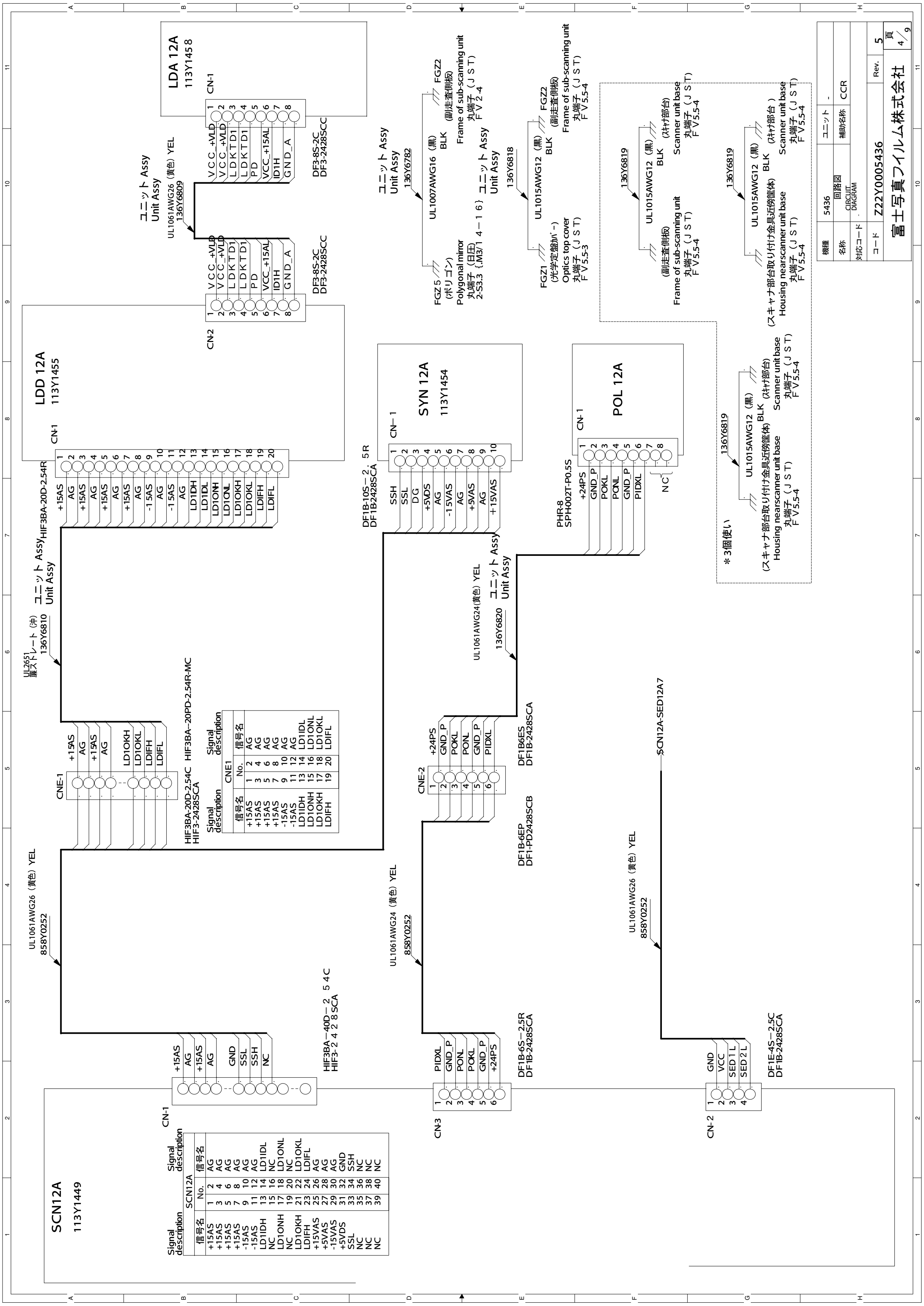
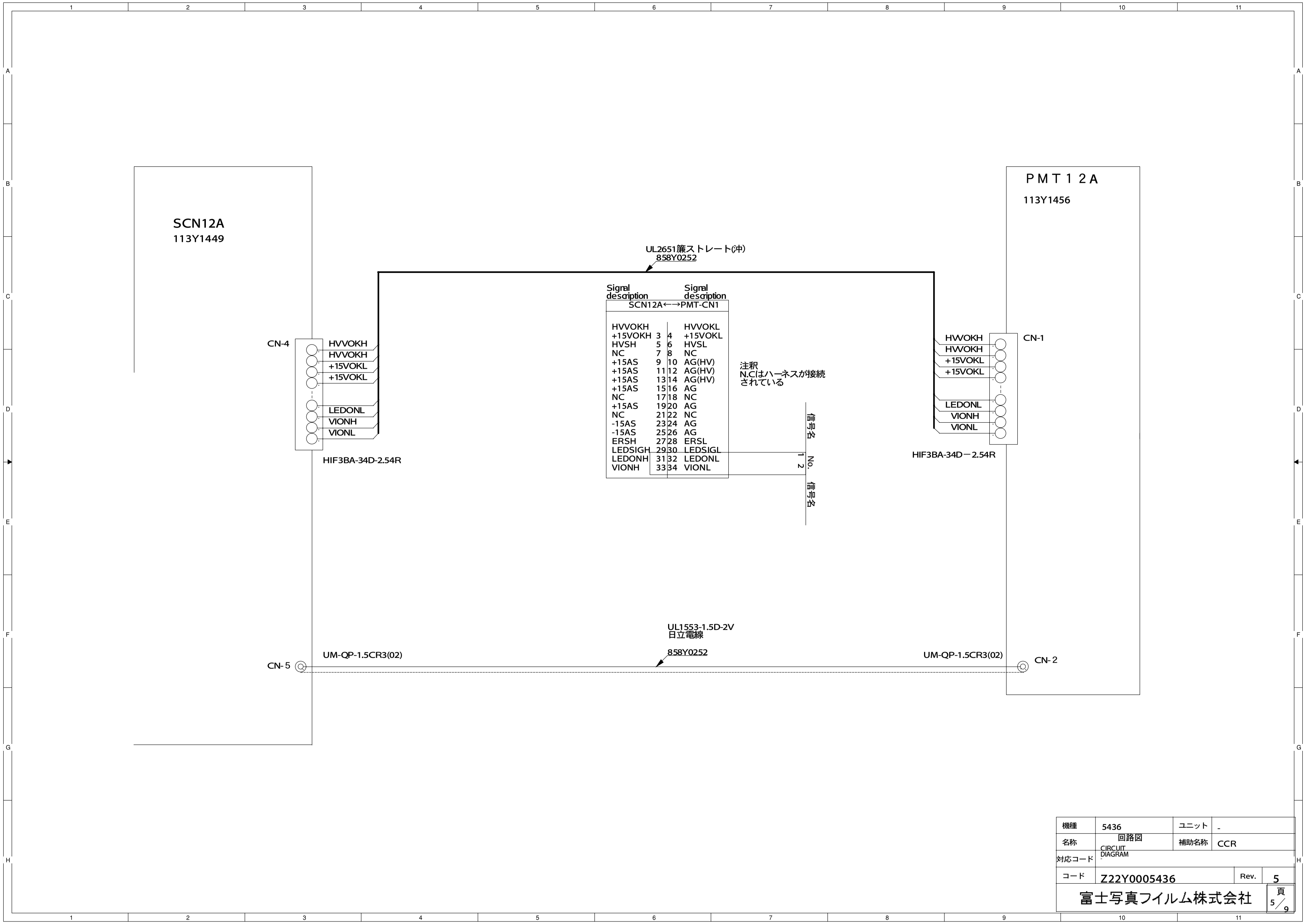
SNS12A
113Y1452
CN1
CN2
SCN12A
113Y1449
CN11
CN12
CPU12A
113Y1451
CN1
CN2
MTH12A
113Y1450
CN1
CN2
CN3
CN4
CN5
CN6
機種 5436
ユニット -
名称 回路図
補助名称 CCR
対応コード -
コード Z22Y0005436
Rev. 5
富士写真フイルム株式会社
頁 2/9
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11

# 回路図
# CIRCUIT DIAGRAM


＊α４００電源に使用する端子は全て
＃２５０ファストン
１７５０２３－１
スリーブ
174817-1
α４００
125N0112
MTH12A
１１３Y１４５０
CPU１２A
１１３Y１４５１
CNN12A
１１３Y1470
CN5
CN6
CN-1
CN-2
CN-5
CN-6
Internal Ethernet cable 機内イーサネット
136N0365
External Ethernet cable 機外イーサネット（PC）
136Y6825
Internal Serial cable 機内シリアル
898Y0714
External Serial cable 機外シリアル（PC）
CN-9
CN-8
CN-10
CN-11
CN-12
CN-7
CNG-11
UL１０１５ AWG１６
136Y6770
メイテンロック
1-480702-0
350550-3(接触子)
RED 赤 (+5V)
BLK 黒 (+5V-GND)
BLK 黒 (+5V-GND)
RED 赤 (+5V)
＋５V
A1 (+5V)
A1-GND (+5V-GND)
A2 (+5V)
A2-GND (+5V-GND)
＋２４V
B (+24V)
B-GND (+24V-GND)
C (+24V)
C-GND (+24V-GND)
＋１５V
H (+15V)
H-GND (+15V-GND)
－１５V
J (-15V)
J- GND (- 15V-GND)
K (+24V)
K-GND (+24V-GND)
５５５７－１０R
５５５６PBTL
ORN 橙 (+24V)
BLK 黒 (+24V-GND)
ORN 橙 (+24V)
BLK 黒 (+24V-GND)
BRN 茶 (+15V)
BLK 黒 (+15V-GND)
BLU 青 (-15V)
GRY 灰 (- 15V-GND)
RED 赤 (+24V)
BLK 黒 (+24V-GND)
136Y6771
UL１０１５ AWG１８
DF1E-2S-2.5C
DF1B2428SCA
EXTRSTL赤RED
GND_+5V黒BLK
UL１０６１ AWG２６
128Y0271
MS1
半田 COM
半田
NO
リセットスイッチ
Reset switch
RED 赤+２４V
BLK 黒 GND
FANG1
119S0008
基板冷却
Board cooling fan
FANG2
５５５７－０８R
５５５６PBTL
５５５９－０８P
５５５８PBTL
+24V 赤 RED
GND 黒 BLK
RED 赤
BLK 黒
赤 RED
黒 BLK
136Y6773
UL１０１５ AWG１８
858Y0253
UL１０１５ AWG１８
»MTH12A-INV12A9
L (+15V) 茶 YEL
L- GND (+15V-GND) 黒 BLK
D (+24V) 黄 YEL
D-GND (+24V-GND) 黒 BLK
E (+24V) 黄 YEL
E-GND (+24V-GND) 黒 BLK
UL１０１５ AWG１８
136Y6772
»400-DRV12A 8
TB1
L
N
E
AC IN
85～２６５V
136Y6776
シールド線 AWG１４
＃２５０ ポジティブロック
１７５０２３－１
（ニュートラル
174817-1（スリーブ）
ライン174817-2(スリーブ) ）
L⇒ファストンスリーブの色は、黄色
N・E⇒ファストンスリーブの色は、青
＊インレットのL・Nの表示が有るので
注意する事。
#187ポジティブロック
173724-1
（ライン174737-2（スリーブ）
ニュートラル・アース間174737－１（スリーブ））
128N0067
ﾕﾆﾊﾞｰｻﾙ
中継 1-480699-0
接触子
３５０５５１－３
ユニバーサル
コネクタ 1-480698-0
接触子
３５０５５２－３
コンセントPlug
インレットInlet
NFB1
LINE
LOAD
CN
136Y6793
136Y6777
シールド線
AWG１４
UL1015AWG14
丸端子ＦＶ２-４（ＪＳＴ）
インレットエコー電子
AC-PO03CS05
インレットASSYInlet Assy.
136N0362
国内・欧米
JAPAN・USA
136N0377
欧州
Europe
136N0376
英国
England
898Y0814
国内（患者環境）
JAPAN
機種 5436
ユニット -
名称 回路図 CIRCUIT DIAGRAM
補助名称 CCR
対応コード -
コード Z22Y0005436
Rev. 5
頁 3／9
富士写真フイルム株式会社

# 回路図
# CIRCUIT DIAGRAM


LDA 12A
113Y1458
CN-1
VCC_+VLD
LDKTD1
PD
VCC_+15AL
ID1H
GND_A
DF3-8S-2C
DF3-2428SCC
ユニット Assy
Unit Assy
UL1061AWG26（黄色）YEL
136Y6809
CN-2
LDD 12A
113Y1455
HIF3BA-20D-2.54R
+15AS
AG
-15AS
LD1DH
LD1DL
LD1ONH
LD1ONL
LD1OKH
LD1OKL
LDIFH
LDIFL
UL2651 薄ストレート（沖）
136Y6810
CNE-1
HIF3BA-20D-2.54C
HIF3-2428SCA
HIF3BA-20PD-2.54R-MC
Signal description
信号名
UL1061AWG26（黄色）YEL
858Y0252
HIF3BA-40D-2.54C
HIF3-2428SCA
SCN12A
113Y1449
CN-1
GND
SSL
SSH
NC
SYN 12A
113Y1454
CN-1
DF1B-10S-2.5R
DF1B-2428SCA
DG
+5VDS
-15VAS
+5VAS
+15VAS
UL1061AWG24（黄色）YEL
136Y6820
CNE-2
+24PS
GND_P
POKL
PONL
PIDXL
DF1B6ES
DF1B-2428SCA
DF1B-6EP
DF1-PD2428SCB
858Y0252
CN-3
DF1B-6S-2.5R
DF1B-2428SCA
POL 12A
PHR-8
SPH002T-P0.5S
NC
SCN12A-SED12A7
UL1061AWG26（黄色）YEL
CN-2
VCC
SED1L
SED2L
DF1E-4S-2.5C
DF1B-2428SCA
UL1007AWG16（黒）BLK
136Y6782
FGZ5（ポリゴン）
Polygonal mirror
丸端子（日圧）
2-S3.3（M3/14-16）
FGZ2（副走査側板）
Frame of sub-scanning unit
丸端子（JST）
FV2-4
UL1015AWG12（黒）BLK
136Y6818
FGZ1（光学定盤カバー）
Optics top cover
FV5.5-3
FV5.5-4
136Y6819
（スキャナ台）
Scanner unit base
（スキャナ部台取り付け金具近傍筐体）
Housing nearscanner unit base
＊3個使い
機種 5436
名称 回路図 CIRCUIT DIAGRAM
対応コード -
コード Z22Y0005436
ユニット -
補助名称 CCR
Rev. 5
頁 4/9
富士写真フイルム株式会社

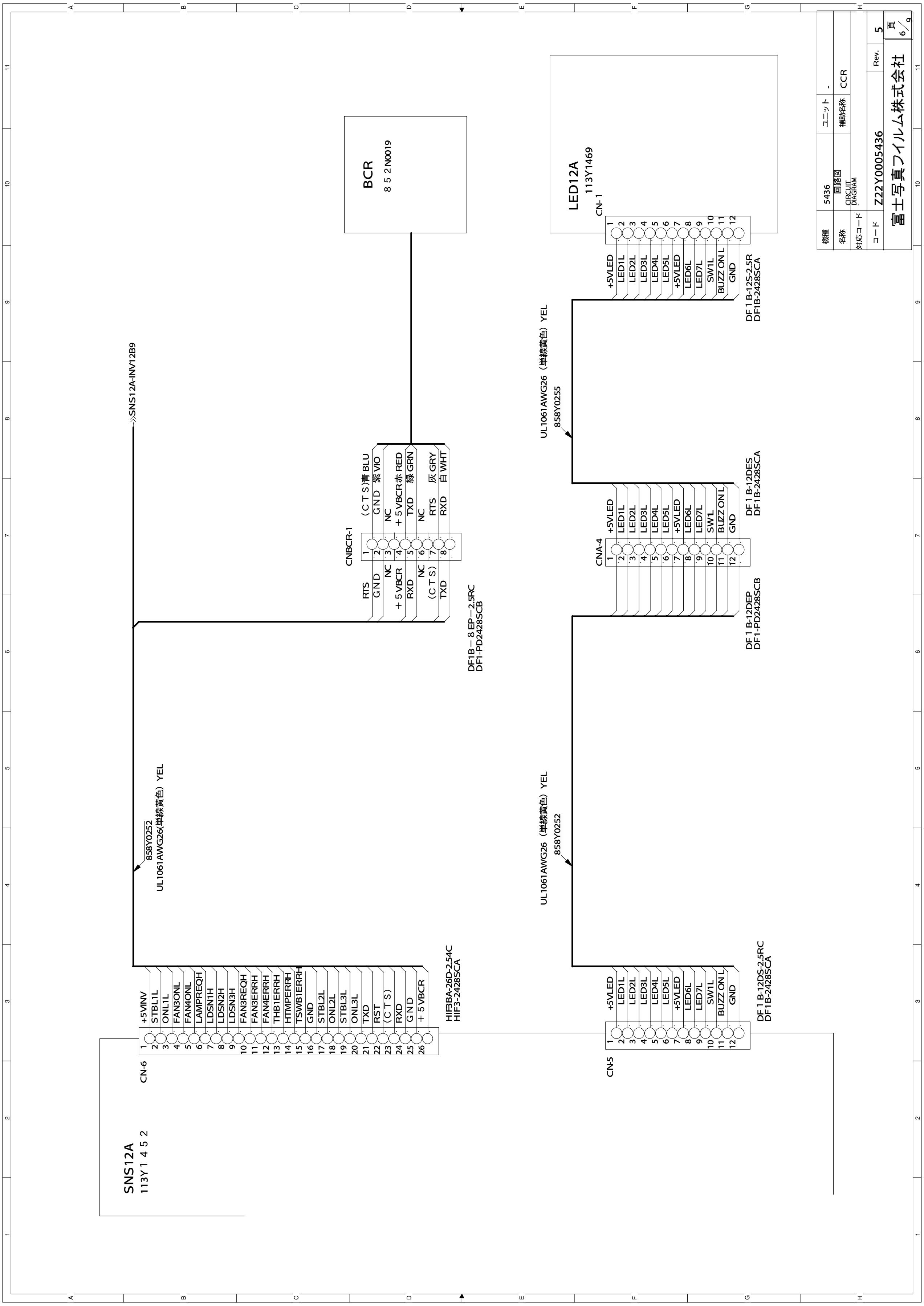

SCN12A
113Y1449
PMT12A
113Y1456
CN-4
CN-1
HVVOKH
HVVOKH
+15VOKL
+15VOKL
LEDONL
VIONH
VIONL
HIF3BA-34D-2.54R
HIF3BA-34D−2.54R
UL2651簾ストレート(沖)
858Y0252
注釈
N.Cはハーネスが接続
されている
信号名
No.
1 2
信号名
CN-5
CN-2
UM-QP-1.5CR3(02)
UM-QP-1.5CR3(02)
UL1553-1.5D-2V
日立電線
858Y0252
機種
5436
ユニット
-
名称
回路図
CIRCUIT DIAGRAM
補助名称
CCR
対応コード
-
コード
Z22Y0005436
Rev.
5
富士写真フイルム株式会社
頁
5/9

SCN12A←→PMT-CN1

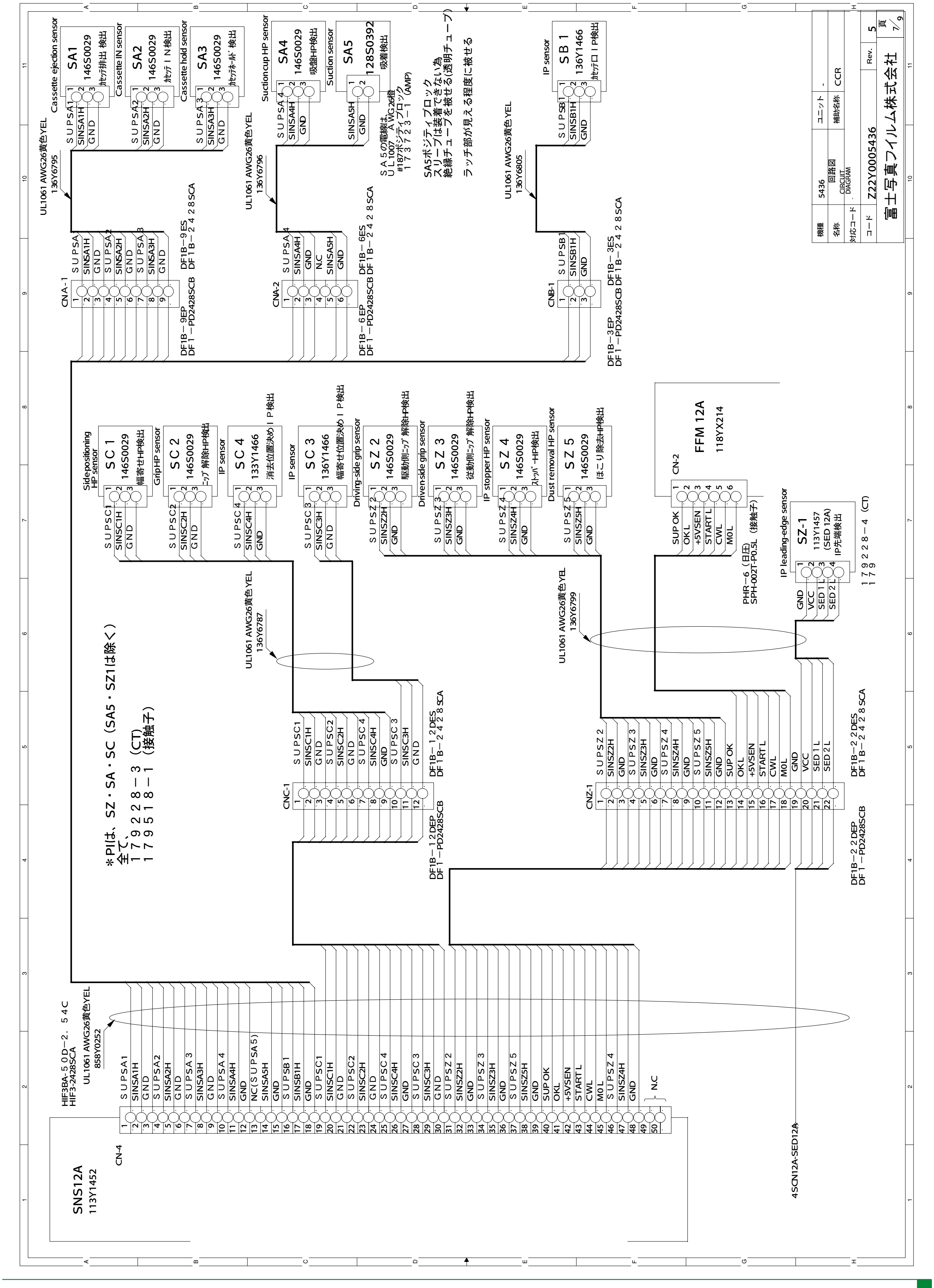
| Signal description | | | Signal description |
|---|---|---|---|
| HVVOKH | | | HVVOKL |
| +15VOKH | 3 | 4 | +15VOKL |
| HVSH | 5 | 6 | HVSL |
| NC | 7 | 8 | NC |
| +15AS | 9 | 10 | AG(HV) |
| +15AS | 11 | 12 | AG(HV) |
| +15AS | 13 | 14 | AG(HV) |
| +15AS | 15 | 16 | AG |
| NC | 17 | 18 | NC |
| +15AS | 19 | 20 | AG |
| NC | 21 | 22 | NC |
| -15AS | 23 | 24 | AG |
| -15AS | 25 | 26 | AG |
| ERSH | 27 | 28 | ERSL |
| LEDSIGH | 29 | 30 | LEDSIGL |
| LEDONH | 31 | 32 | LEDONL |
| VIONH | 33 | 34 | VIONL |

# 11

# 回路図
# CIRCUIT DIAGRAM

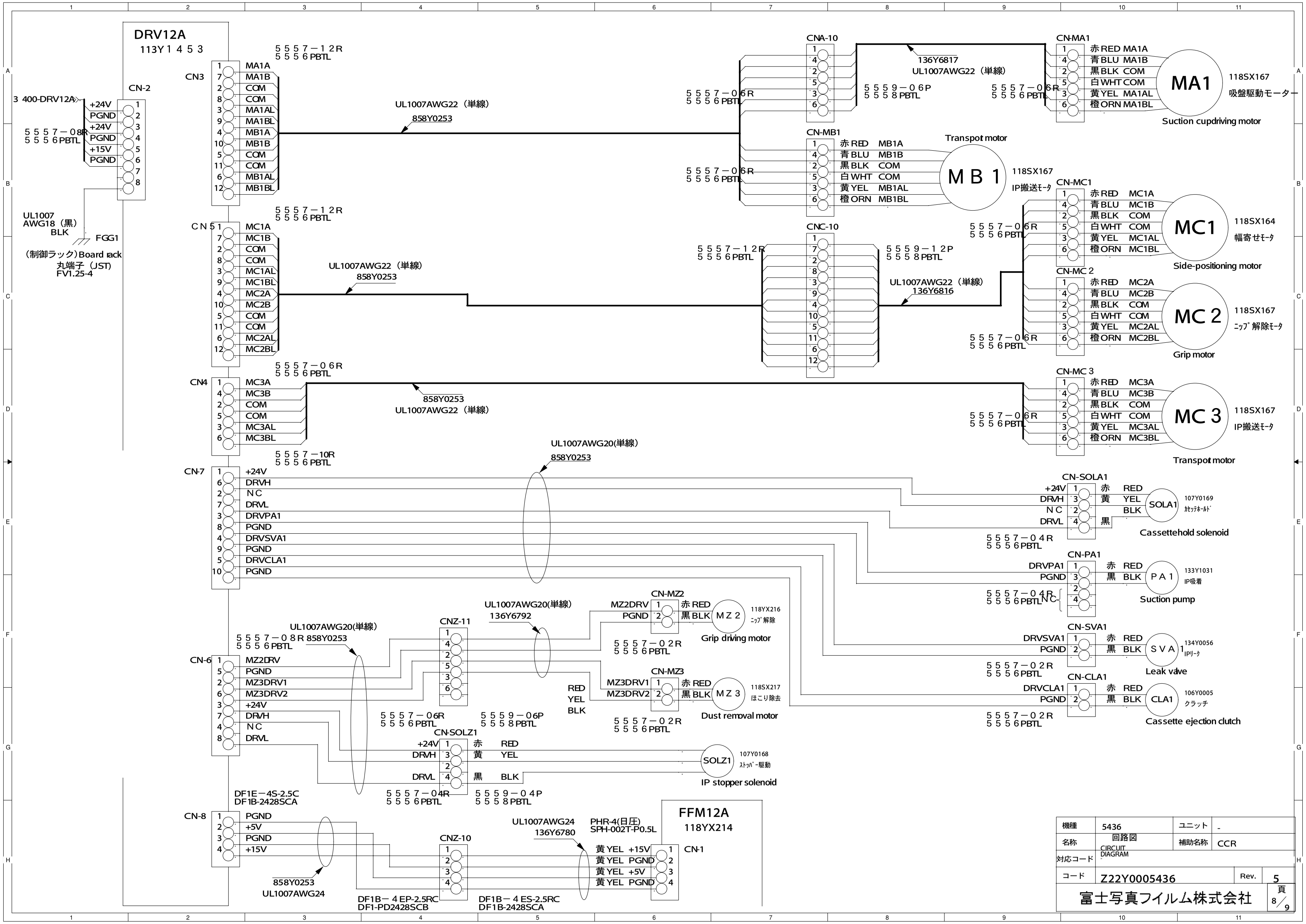

BCR
8 5 2 N0019
LED12A
113Y1469
CN-1
+5VLED
LED1L
LED2L
LED3L
LED4L
LED5L
+5VLED
LED6L
LED7L
SW1L
BUZZ ON L
GND
DF1B-12S-2.5R
DF1B-2428SCA
UL1061AWG26（単線黄色）YEL
858Y0255
DF1B-12DES
DF1B-2428SCA
CNA-4
DF1B-12DEP
DF1-PD2428SCB
858Y0252
CN-5
DF1B-12DS-2.5RC
DF1B-2428SCA
CNBCR-1
（CTS）青 BLU
GND 紫 VIO
NC
+5VBCR 赤 RED
TXD 緑 GRN
NC
RTS 灰 GRY
RXD 白 WHT
RTS
GND
NC
+5VBCR
RXD
NC
（CTS）
TXD
DF1B－8EP－2.5RC
DF1-PD2428SCB
>>SNS12A-INV12B9
858Y0252
UL1061AWG26(単線黄色) YEL
SNS12A
113Y1 4 5 2
CN-6
+5VINV
STBL1L
ONL1L
FAN3ONL
FAN4ONL
LAMPREQH
LDSN1H
LDSN2H
LDSN3H
FAN3REQH
FAN3ERRH
FAN4ERRH
THB1ERRH
HTMPERRH
TSWB1ERRH
GND
STBL2L
ONL2L
STBL3L
ONL3L
TXD
RST
（CTS）
RXD
GND
+5VBCR
HIF3BA-26D-2.54C
HIF3-2428SCA
機種 5436
名称 回路図 CIRCUIT DIAGRAM
対応コード
コード Z22Y0005436
ユニット -
補助名称 CCR
Rev. 5
頁 6/9
富士写真フイルム株式会社

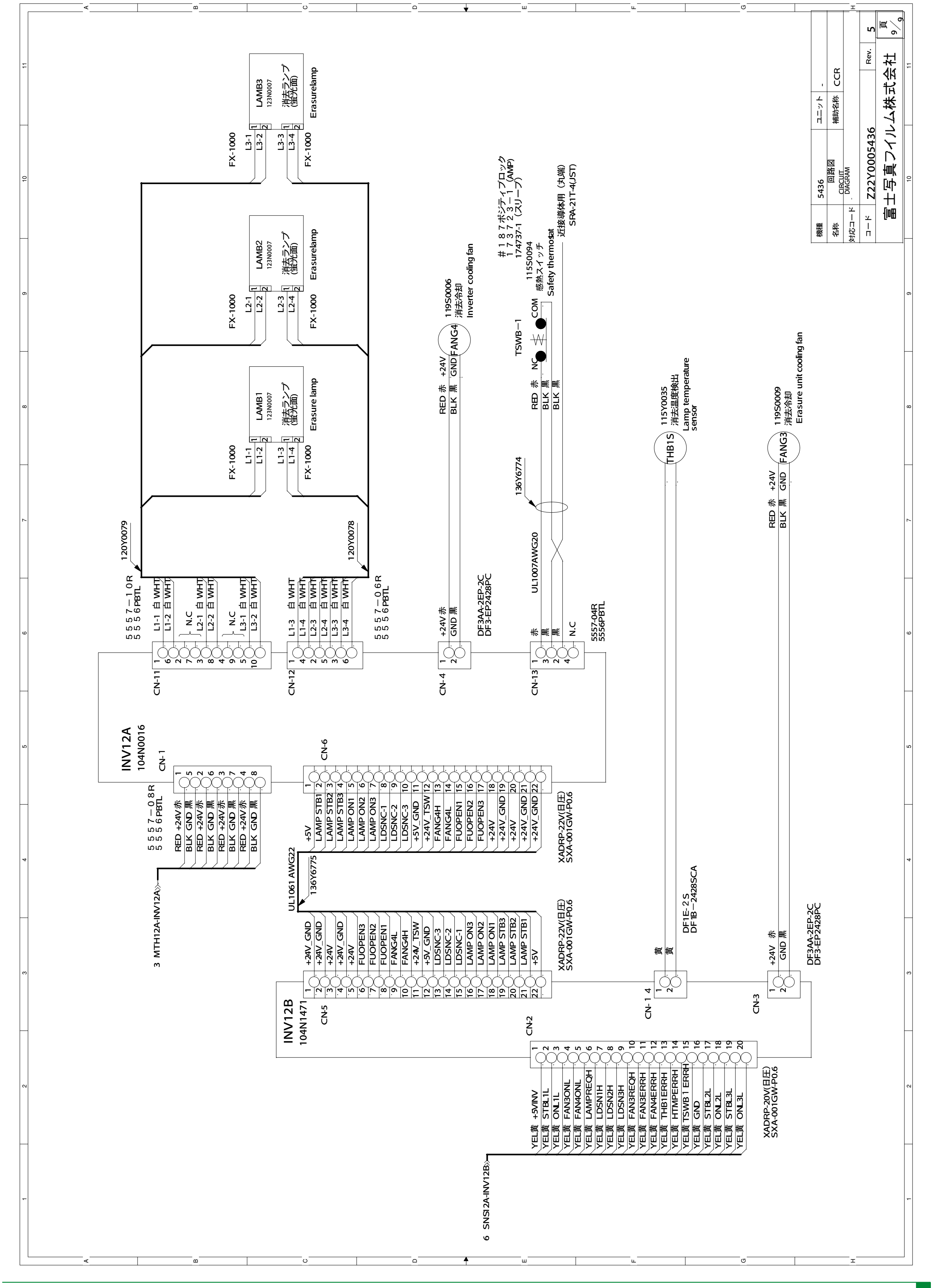
# 回路図
# CIRCUIT DIAGRAM
# 11


Cassette ejection sensor
SA1
146S0029
ｶｾｯﾃ排出 検出
Cassette IN sensor
SA2
146S0029
ｶｾｯﾃＩＮ検出
Cassette hold sensor
SA3
146S0029
ｶｾｯﾃﾎｰﾙﾄﾞ検出
Suction cup HP sensor
SA4
146S0029
吸盤HP検出
Suction sensor
SA5
128S0392
吸着検出
IP sensor
SB1
136Y1466
ｶｾｯﾃ口ＩＰ検出
SUPSA1
SINSA1H
GND
SUPSA2
SINSA2H
SUPSA3
SINSA3H
SUPSA4
SINSA4H
SINSA5H
SUPSB1
SINSB1H
N.C
UL1061 AWG26黄色YEL
136Y6795
136Y6796
136Y6805
DF1B－9ES
DF1B－2428SCA
DF1B－6ES
DF1B－3ES
CNA-1
CNA-2
CNB-1
DF1B－9EP
DF1－PD2428SCB
DF1B－6EP
DF1B－3EP
ＳＡ５の電線は、
ＵＬ1007　AWG26橙
#187ポジティブロック
１７３７２３－１（AMP）
SA5ポジティブロック
スリーブは装着できない為
絶縁チューブを被せる(透明チューブ)
ラッチ部が見える程度に被せる
Sidepositioning HP sensor
SC1
146S0029
幅寄せHP検出
Grip HP sensor
SC2
146S0029
ﾆｯﾌﾟ解除HP検出
IP sensor
SC4
133Y1466
消去位置決めＩＰ検出
IP sensor
SC3
136Y1466
幅寄せ位置決めＩＰ検出
Driving-side grip sensor
SZ2
146S0029
駆動側ﾆｯﾌﾟ解除HP検出
Driven-side grip sensor
SZ3
146S0029
従動側ﾆｯﾌﾟ解除HP検出
IP stopper HP sensor
SZ4
146S0029
ｽﾄｯﾊﾟｰHP検出
Dust removal HP sensor
SZ5
146S0029
ほこり除去HP検出
CN-2
FFM 12A
118YX214
SUP OK
OKL
+5VSEN
START L
CWL
MOL
PHR－6（日圧）
SPH-002T-P0.5L（接触子）
IP leading-edge sensor
SZ-1
113Y1457
(SED 12A)
IP先端検出
GND
VCC
SED1L
SED2L
179228－4（CT）
179
UL1061 AWG26黄色YEL
136Y6787
136Y6799
SUPSC1
SINSC1H
SUPSC2
SINSC2H
SUPSC4
SINSC4H
SUPSC3
SINSC3H
DF1B－12DES
DF1B－2428SCA
CNC-1
DF1B－12DEP
DF1－PD2428SCB
SUPSZ2
SINSZ2H
SUPSZ3
SINSZ3H
SUPSZ4
SINSZ4H
SUPSZ5
SINSZ5H
DF1B－22DES
DF1B－2428SCA
CNZ-1
DF1B－22DEP
DF1－PD2428SCB
＊PIは、SZ・SA・SC（SA5・SZ1は除く）
全て、
１７９２２８－３（CT）
１７９５１８－１（接触子）
HIF3BA-50D－2．54C
HIF3-2428SCA
UL1061 AWG26黄色YEL
858Y0252
NC(SUPSA5)
SINSA5H
SUPSZ4
SINSZ4H
N.C
CN-4
SNS12A
113Y1452
4SCN12A-SED12A
機種 5436
名称 回路図 CIRCUIT DIAGRAM
ユニット -
補助名称 CCR
対応コード
コード Z22Y0005436
Rev. 5
頁 7/9
富士写真フイルム株式会社

# 11

# 回路図
# CIRCUIT DIAGRAM


DRV12A
113Y1 4 5 3
CN-2
3 400-DRV12A
+24V
PGND
+24V
PGND
+15V
PGND
5 5 5 7－0 8R
5 5 5 6 PBTL
UL1007
AWG18（黒）
BLK
FGG1
（制御ラック）Board rack
丸端子（JST）
FV1.25-4
CN3
MA1A
MA1B
COM
COM
MA1AL
MA1BL
MB1A
MB1B
COM
COM
MB1AL
MB1BL
5 5 5 7－1 2R
5 5 5 6 PBTL
UL1007AWG22（単線）
858Y0253
CN 51
MC1A
MC1B
COM
COM
MC1AL
MC1BL
MC2A
MC2B
COM
COM
MC2AL
MC2BL
CN4
MC3A
MC3B
COM
COM
MC3AL
MC3BL
5 5 5 7－0 6R
5 5 5 6 PBTL
CN-7
+24V
DRVH
N C
DRVL
DRVPA1
PGND
DRVSVA1
PGND
DRVCLA1
PGND
5 5 5 7－10R
5 5 5 6 PBTL
UL1007AWG20(単線)
858Y0253
CN-6
MZ2DRV
PGND
MZ3DRV1
MZ3DRV2
+24V
DRVH
N C
DRVL
5 5 5 7－0 8 R 858Y0253
5 5 5 6 PBTL
CN-8
PGND
+5V
PGND
+15V
DF1E－4S-2.5C
DF1B-2428SCA
858Y0253
UL1007AWG24
CNA-10
136Y6817
UL1007AWG22（単線）
5 5 5 9－0 6 P
5 5 5 8 PBTL
CN-MA1
赤 RED MA1A
青 BLU MA1B
黒 BLK COM
白 WHT COM
黄 YEL MA1AL
橙 ORN MA1BL
MA1
118SX167
吸盤駆動モーター
Suction cupdriving motor
CN-MB1
赤 RED MB1A
青 BLU MB1B
黒 BLK COM
白 WHT COM
黄 YEL MB1AL
橙 ORN MB1BL
M B 1
118SX167
IP搬送ﾓｰﾀ
Transpot motor
CNC-10
5 5 5 7－1 2R
5 5 5 6 PBTL
5 5 5 9－1 2P
5 5 5 8 PBTL
UL1007AWG22（単線）
136Y6816
CN-MC1
赤 RED MC1A
青 BLU MC1B
黒 BLK COM
白 WHT COM
黄 YEL MC1AL
橙 ORN MC1BL
MC1
118SX164
幅寄せﾓｰﾀ
Side-positioning motor
CN-MC 2
赤 RED MC2A
青 BLU MC2B
黒 BLK COM
白 WHT COM
黄 YEL MC2AL
橙 ORN MC2BL
MC 2
118SX167
ﾆｯﾌﾟ解除ﾓｰﾀ
Grip motor
CN-MC 3
赤 RED MC3A
青 BLU MC3B
黒 BLK COM
白 WHT COM
黄 YEL MC3AL
橙 ORN MC3BL
MC 3
118SX167
IP搬送ﾓｰﾀ
Transpot motor
CN-SOLA1
+24V 赤 RED
DRVH 黄 YEL
N C BLK
DRVL 黒
SOLA1
107Y0169
ｶｾｯﾃﾎｰﾙﾄﾞ
Cassettehold solenoid
5 5 5 7－0 4R
5 5 5 6 PBTL
CN-PA1
DRVPA1 赤 RED
PGND 黒 BLK
P A 1
133Y1031
IP吸着
Suction pump
NC
CN-SVA1
DRVSVA1 赤 RED
PGND 黒 BLK
S V A
134Y0056
IPﾘｰｸ
Leak valve
5 5 5 7－0 2R
5 5 5 6 PBTL
CN-CLA1
DRVCLA1 赤 RED
PGND 黒 BLK
CLA1
106Y0005
クラッチ
Cassette ejection clutch
CNZ-11
UL1007AWG20(単線)
136Y6792
CN-MZ2
MZ2DRV 赤 RED
PGND 黒 BLK
M Z 2
118YX216
ﾆｯﾌﾟ解除
Grip driving motor
CN-MZ3
MZ3DRV1 赤 RED
MZ3DRV2 黒 BLK
M Z 3
118SX217
ほこり除去
Dust removal motor
RED
YEL
BLK
5 5 5 7－0 6R
5 5 5 6 PBTL
5 5 5 9－0 6P
5 5 5 8 PBTL
CN-SOLZ1
+24V 赤 RED
DRVH 黄 YEL
DRVL 黒 BLK
SOLZ1
107Y0168
ｽﾄｯﾊﾟｰ駆動
IP stopper solenoid
5 5 5 9－0 4P
5 5 5 8 PBTL
CNZ-10
DF1B－4 EP-2.5RC
DF1-PD2428SCB
DF1B－4 ES-2.5RC
DF1B-2428SCA
UL1007AWG24
136Y6780
PHR-4(日圧)
SPH-002T-P0.5L
黄 YEL +15V
黄 YEL PGND
黄 YEL +5V
黄 YEL PGND
FFM12A
118YX214
CN-1
機種 5436
ユニット -
名称 回路図 CIRCUIT DIAGRAM
補助名称 CCR
対応コード
コード Z22Y0005436
Rev. 5
富士写真フイルム株式会社
頁 8/9


LAMB1 123N0007 消去ランプ (蛍光面) Erasure lamp
LAMB2 123N0007 消去ランプ (蛍光面) Erasurelamp
LAMB3 123N0007 消去ランプ (蛍光面) Erasurelamp
FX-1000
L1-1 L1-2 L1-3 L1-4
L2-1 L2-2 L2-3 L2-4
L3-1 L3-2 L3-3 L3-4
120Y0079
120Y0078
5557-10R 5556PBTL
5557-06R 5556PBTL
N.C
白 WHT
CN-11
CN-12
CN-4
CN-13
+24V 赤
GND 黒
DF3AA-2EP-2C DF3-EP2428PC
5557-04R 5556PBTL
UL1007AWG20
136Y6774
RED 赤 +24V
BLK 黒 GND
FANG4
119S0006 消去冷却 Inverter cooling fan
TSWB-1
NC COM
115S0094 感熱スイッチ Safety thermostat
＃187ポジティブロック 173723-1 (AMP) 174737-1 (スリーブ)
近接導体用 (丸端) SRA-21T-4(JST)
THB1S
115Y0035 消去温度検出 Lamp temperature sensor
FANG3
119S0009 消去冷却 Erasure unit cooling fan
INV12A 104N0016
CN-1
5557-08R 5556PBTL
RED +24V 赤
BLK GND 黒
3 MTH12A-INV12A》
CN-6
+5V
LAMP STB1
LAMP STB2
LAMP STB3
LAMP ON1
LAMP ON2
LAMP ON3
LDSNC-1
LDSNC-2
LDSNC-3
+5V_GND
+24V_TSW
FANG4H
FANG4L
FUOPEN1
FUOPEN2
FUOPEN3
+24V
+24V_GND
XADRP-22V(日圧) SXA-001GW-P0.6
UL1061 AWG22
136Y6775
INV12B 104N1471
CN-5
CN-2
CN-14
CN-3
黄
DF1E-2S DF1B-2428SCA
+24V 赤
GND 黒
DF3AA-2EP-2C DF3-EP2428PC
YEL黄 +5VINV
STBL1L
ONL1L
FAN3ONL
FAN4ONL
LAMPREQH
LDSN1H
LDSN2H
LDSN3H
FAN3REQH
FAN3ERRH
FAN4ERRH
THB1ERRH
HTMPERRH
TSWB1 ERRH
GND
STBL2L
ONL2L
STBL3L
ONL3L
XADRP-20V(日圧) SXA-001GW-P0.6
6 SNS12A-INV12B》
A B C D E F G H
1 2 3 4 5 6 7 8 9 10 11
機種 5436
ユニット -
名称 回路図 CIRCUIT DIAGRAM
補助名称 CCR
対応コード
コード Z22Y0005436
Rev. 5
頁 9/9
富士写真フイルム株式会社

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| 109N0016C | 02-06 |
| 113Y1449G/H | 09B-06 |
| 113Y1450D | 09B-02 |
| 113Y1451H/J | 09B-07 |
| 113Y1452D | 09B-05 |
| 113Y1453D | 09B-04 |
| 113Y1456C | 08-02 |
| 113Y1457C | 07C-07 |
| 113Y1466 | 04B-25 |
| 113Y1466 | 05D-08 |
| 113Y1469B | 01B-05 |
| 113Y1470A | 09A-03 |
| 113Y1471D | 02-04 |
| 113Y1552A | 09B-03 |
| 114Y5436002A | 09B-23 |
| 115S0094 | 04A-11 |
| 115Y0035B | 04A-09 |
| 118SX063 | 03B-16 |
| 118SX164 | 05C-30 |
| 118SX167 | 04B-22 |
| 118SX167 | 05A-13 |
| 118YX214A | 07A-02 |
| 118YX216B | 07B-25 |
| 118YX245 | 07B-01 |
| 119S0006 | 02-02 |
| 119S0008 | 09A-04 |
| 119S0009 | 02-17 |
| 120Y0078D | 04A-05 |
| 120Y0079D | 04A-07 |
| 123N0007B | 04A-06 |
| 125Y0062G | 09B-08 |
| 128N0067 | 09A-14 |
| 128S0392 | 03D-10 |
| 128Y0271C | 09A-07 |
| 128Y0280 | 09A-12 |
| 133Y1031A | 03D-09 |
| 134Y0056B | 03D-06 |
| 136N0362 | 10-01 |
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| 136N0364/0377 | 10-03 |
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| 136N0371 | 10-19 |
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| 136Y6774C | 10-06 |
| 136Y6775E | 10-07 |
| 136Y6776F | 10-08 |
| 136Y6777E | 10-09 |
| 136Y6780F | 10-10 |
| 136Y6787C | 10-11 |
| 136Y6792D | 10-12 |
| 136Y6793D | 10-13 |
| 136Y6796C | 10-14 |
| 136Y6799E | 10-15 |
| 136Y6805C | 10-16 |
| 136Y6816C | 10-17 |
| 136Y6817D | 10-18 |
| 136Y8545A | 10-20 |
| 137S1219 | 09B-22 |
| 137S1220 | 09B-21 |
| 137S2083 | 09B-20 |
| 137S2084 | 09B-19 |
| 137S2092 | 09B-18 |
| 137S2094 | 09B-17 |
| 137S2096 | 09B-16 |
| 137S2097 | 09B-15 |
| 138S0345 | 02-19 |
| 146S0029 | 03C-06 |
| 146S0029 | 03D-04 |
| 146S0029 | 05C-28 |
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| 146S0029 | 07B-10 |
| 146S0029 | 07D-13 |
| 301S4990306 | 07B-17 |
| 305S0077 | 07A-04 |
| 308S0051 | 09B-11 |
| 308S0062 | 01A-22 |
| 308S0062 | 06-02 |
| 308S0062 | 09B-12 |
| 308S0082 | 04A-16 |
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| 310S8002516 | 07B-22 |
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| 313N1083D | 04B-30 |
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| 315G311017 | 03A-04 |
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| 316S1037 | 02-25 |
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| 316S1122 | 02-24 |
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| 316S2028 | 03A-20 |
| 316S3098 | 01A-16 |
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| 318F0172 | 02-20 |
| 318F0172 | 09A-19 |
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| 318N1066A | 05B-16 |
| 318S1164 | 02-21 |
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| 318S1164 | 04A-18 |
| 318S1164 | 05C-34 |
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| 318S1164 | 05E-13 |
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| 319N3604A | 03A-16 |
| 319N3616B | 07B-23 |
| 319N3618 | 07A-14 |
| 319N3619 | 07B-06 |
| 319N3620B | 04B-07 |
| 319N3623B | 05C-14 |
| 319N3624B | 05C-03 |
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| 322N0052 | 05C-10 |
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| 322SF147 | 05B-04 |
| 322SF148 | 05C-18 |
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| 322SF149 | 05A-10 |
| 322SF149 | 07A-12 |
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| 322SF153 | 05B-07 |
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| 322SF168 | 07A-08 |
| 322SF178 | 03A-10 |
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| 322SY093 | 05C-01 |
| 322SY121 | 04B-04 |
| 322SY122 | 04B-05 |
| 322SY232 | 05C-21 |
| 322SY233 | 05B-06 |
| 322SY249 | 05D-01 |
| 323N0033 | 07A-03 |
| 323N0040 | 07A-21 |
| 323S3234 | 05A-01 |
| 323S3251 | 04C-17 |
| 324N1026 | 05E-09 |
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| 324N1032A | 05E-06 |
| 324N3038C | 04C-01 |
| 324N3038C | 05B-02 |
| 324N3041E | 04B-19 |
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| 327N0136B | 07B-07 |
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| 327N0140A | 05C-20 |
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| 327N0142A | 05A-17 |
| 327N0143C | 05A-19 |
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| 327N1101904 | 03B-04 |
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| 327N1103802 | 03B-02 |
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| 327S1103002A | 05A-16 |
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| 334N0041A | 05C-02 |
| 334N2366B | 04B-14 |
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| 343N0039C | 07A-06 |
| 343N0048 | 01B-21 |
| 344N0002B | 07B-32 |
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| 345N1406D | 01B-22 |
| 345N1419B | 08-01 |
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| 346N1127B | 09A-16 |
| 346N1128B | 09A-17 |
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| 347N1598A | 08-04 |
| 347N1599 | 08-06 |
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| 350N2243B | 01A-20 |
| 350N2244B | 01A-06 |
| 350N2245B/C | 01A-07 |
| 350N2387C | 01B-07 |
| 350N2389C | 01B-26 |
| 350N2390C | 01B-25 |
| 350N2496A | 03E-09 |
| 350N2533A | 07A-01 |
| 350N2534 | 07B-26 |
| 350Y1482 | 01A-21 |
| 350Y1483 | 01A-11 |
| 350Y1496 | 01A-02 |
| 350Y1519 | 01A-01 |
| 350Y1530 | 01A-15 |
| 352N0458D | 09B-01 |
| 352N0493A | 01A-10 |
| 352Y0058B | 01B-01 |
| 355N0550D | 05C-31 |
| 356N6801D | 09A-10 |
| 356N6813C | 07D-01 |
| 356N6819C | 07B-12 |
| 356N6820E | 07B-24 |
| 356N6823D | 03E-04 |
| 356N6824C | 03E-08 |
| 356N6825D | 03E-15 |
| 356N6826B | 03E-19 |
| 356N6828B | 03E-06 |
| 356N6829C | 03C-08 |
| 356N6829C | 03E-11 |
| 356N6830B | 03A-01 |
| 356N6831C | 03B-07 |
| 356N6832F | 03B-01 |
| 356N6833F | 07D-08 |
| 356N6834B | 07C-06 |
| 356N6836B | 07B-35 |
| 356N6837B | 07C-08 |
| 356N6838C | 04A-15 |
| 356N6839C | 04B-12 |
| 356N6840B | 04A-13 |
| 356N6842D | 04A-14 |
| 356N6843B | 04B-18 |
| 356N6844C | 04B-26 |
| 356N6845B | 04A-12 |
| 356N6847C | 04B-27 |
| 356N6848D | 05C-17 |
| 356N6849C | 05C-29 |
| 356N6867C | 07B-02 |
| 356N6871B | 07B-27 |
| 356N6923B | 02-03 |
| 356N6926D | 04C-20 |
| 356N6927B | 02-07 |
| 356N6928E | 02-05 |
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| 356N6995C | 09A-13 |
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| 356N8121A | 07C-01 |
| 356N8122A | 07C-05 |
| 356N8123A | 07C-04 |
| 356N8126B | 07C-09 |
| 356N8167C | 03A-05 |
| 356N8168A | 03D-07 |
| 356N8169B | 05A-15 |
| 356N8170D | 05E-04 |
| 356N8171A | 01A-05 |
| 356N8212B | 05C-06 |
| 356N8213C | 05D-09 |
| 356N8214B | 05E-02 |
| 356N8215B | 05A-11 |
| 356N8216C | 05D-11 |
| 356N8217C | 05A-20 |
| 356N8225B | 01A-03 |
| 356N8226B | 01A-04 |
| 356N8315A | 03D-12 |
| 356N8388 | 08-09 |
| 356N8389 | 08-05 |
| 356N8470A | 04B-06 |
| 356N8471B | 04B-16 |
| 356N8472B | 04B-28 |
| 356N8473B | 04B-17 |
| 356N8476B | 05B-13 |
| 356N8487A | 09A-06 |
| 356N8602 | 01A-13 |
| 356Y0187 | 03A-09 |
| 357N1271C | 01B-04 |
| 358N0163D | 04A-01 |
| 358N0164C | 04B-08 |
| 358N0165F | 04A-02 |
| 360N0360A | 03B-12 |
| 360N0360A | 04C-03 |
| 360N0362D | 07B-09 |
| 360N0363 | 03B-13 |
| 360N0364A | 04C-12 |
| 363N1788A | 03E-16 |
| 363N2056F | 07C-12 |
| 363N2057C | 07C-10 |
| 363N2060C | 07B-29 |
| 363N2062G | 03C-02 |
| 363N2065D | 03C-10 |
| 363N2068C | 04B-23 |
| 363N2070B | 04B-20 |
| 363N2071B | 04B-21 |
| 363N2072B | 04B-15 |
| 363N2073B | 05C-09 |
| 363N2075B | 05D-13 |
| 363N2076C | 03E-01 |
| 363N2109C | 05D-07 |
| 363N2110B | 05B-14 |
| 363N2111B | 05D-15 |
| 363N2113D | 05D-02 |
| 363N2114C | 05B-11 |
| 363N2115 | 05C-04 |
| 363N2241C | 04B-24 |
| 363N2242B | 02-09 |
| 363N2243D | 03C-01 |
| 363N2244B | 04B-29 |
| 363N2346A | 07C-17 |
| 363N2388 | 03C-12 |
| 363Y0408 | 07C-18 |
| 364N0092C | 09A-05 |
| 364S0001 | 02-18 |
| 364S0006 | 02-01 |
| 366N0055E | 03C-05 |
| 367S0045 | 05E-01 |
| 367S1087 | 02-16 |
| 367S2027 | 02-15 |
| 370N0255B | 03D-16 |
| 370N0256B | 03D-08 |
| 372S0049 | 03D-13 |
| 372S0050 | 03D-11 |
| 372S0053 | 03D-14 |

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| 376N0198A | 01B-20 |
| 376N0215B | 01B-19 |
| 382N1217A | 01B-14 |
| 382N1218A | 01B-15 |
| 382N1219A | 01B-12 |
| 382N1220A | 01B-13 |
| 382N1221A | 01B-08 |
| 382N1222A | 01B-09 |
| 382N1223A | 01B-17 |
| 382N1224A | 01B-16 |
| 382N1225A | 01B-10 |
| 382N1315A | 01B-11 |
| 382N1398 | 02-13 |
| 386S0028 | 02-12 |
| 386Y0029 | 07D-14 |
| 387N0119C | 07B-18 |
| 387N0120C | 07D-03 |
| 387N0130D | 02-08 |
| 387N0130D | 03D-01 |
| 387N0131B | 02-10 |
| 387N0136B | 05D-14 |
| 387N0137C | 07D-02 |
| 387N0138C | 04B-01 |
| 387N0138C | 05B-12 |
| 387N0138C | 05D-06 |
| 387N0138C | 05E-03 |
| 387N0138C | 07A-18 |
| 387N0138C | 07D-04 |
| 387N0138C | 08-12 |
| 388N1073 | 07A-11 |
| 388N1156B | 05C-16 |
| 388N1157A | 03E-07 |
| 388N1158A | 03E-18 |
| 388N1192A | 03B-18 |
| 388N2434A | 07A-10 |
| 388N2435 | 07B-28 |
| 388N2436 | 07D-10 |
| 388N2447B | 05C-05 |
| 388N2448A | 05C-25 |
| 388N2449 | 03E-13 |
| 388N2450B | 03B-11 |
| 388N2451 | 03C-07 |
| 388N2471A | 05D-04 |
| 388N2472B | 05B-01 |
| 388N2473B | 05B-10 |
| 388N2474A | 05E-10 |
| 388N2475C | 04C-02 |
| 388N2476C | 04C-10 |
| 388N2477 | 07B-11 |
| 388N2484C | 04C-08 |
| 388N2485A | 03B-17 |
| 388N2493 | 04C-92 |
| 388N2493A | 04C-21 |
| 388N2495 | 07A-20 |
| 388N2496 | 07A-07 |
| 388N2497A | 04C-16 |
| 388N2498A | 04C-11 |
| 388N3081B | 03D-02 |
| 388N3082C | 03A-14 |
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| 392N0009A | 03A-06 |
| 398N0059D | 03D-03 |
| 401N0777C | 07A-19 |
| 401N0778B | 04A-08 |
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| 405N1770A | 01A-12 |
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| 405Y0166 | 01B-2.2 |
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| 603N0182E | 04A-04 |
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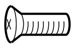
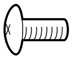
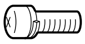
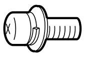
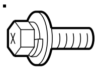
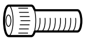
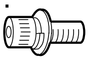
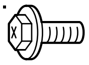
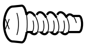
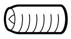
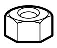
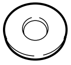
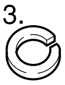
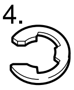
# ネジ・座金類の表示記号一覧表

# TABLE OF SCREWS / WASHERS INDICATION SYMBOLS

Table of Screws/Washers Indication Symbols

| No. | Part name | Indication Symbols | Symbol in the dissassembly chart (example) | Size | Shape |
|---|---|---|---|---|---|
| 1 | Cross-recessed flat-head screw | S | S3 x 10 | M3 x 10 | 1.  Flat-head screw<br>S<br>2.  Truss-head screw<br>T<br>3.  Pan -head screw with spring washer<br>A<br>4.  Pan-head screw with spring and plain washers<br>B<br>5.  Hexagon-headed screw with spring and plain washer<br>BR<br>6.  Hexagon-headed bolt<br>Q<br>7.  Hexagon-Headed bolt with spring and plain washer<br>BQ<br>8.  Deltight screw*<br>DT<br>9.  Plax<br>Ps<br>10.  Hexagon-headed set screw WP<br>11.  Hexagon nut<br>Na<br>12.  Plain washer<br>W<br>13.  Spring washer<br>SW<br>14.  E ring<br>E |
| 2 | Cross-recessed truss-head screw | T | ✶T4 x 8 | M4 x 8 | |
| 3 | Cross-recessed pan-head screw with spring washer | A | A3 x 6 | M3 x 6 | |
| 4 | Cross-recessed pan-head screw with spring and plain washers | B | B3 x 16 | M3 x 16 | |
| 5 | Cross-recessed hexagon-headed screw with spring and plain washers | BR | BR 4 x 25 | M4 x 25 | |
| 6 | Hexagon-headed bolt | Q | Q3 x 20 | M3 x 20 | |
| 7 | Hexagon-Headed bolt with spring and plain washer | BQ | BQ4 x 10 | M4 x 10 | |
| 8 | Deltight screw* | DT | DT4x8 | M4 x 8 | |
| 9 | Plax | Ps | Ps3 x 6 | Nominal diameter 3 x 6 | |
| 10 | Hexagon-headed setscrew<br>(double-point) | WP | WP4 x 6<br>WP4 x 8 | M4 x 6<br>M4 x 8 | |
| 11 | Hexagon nut | Na | Na3 | M3 | |
| 12 | Plain washer | W | W4 | M4 | |
| 13 | Spring washer | SW | SW3 | M3 | |
| 14 | E ring | E | E6 | Nominal diameter 6 | |

* : Self-tapping screw with a noncircular end
✶: Stainless-made
▭ : Painted black

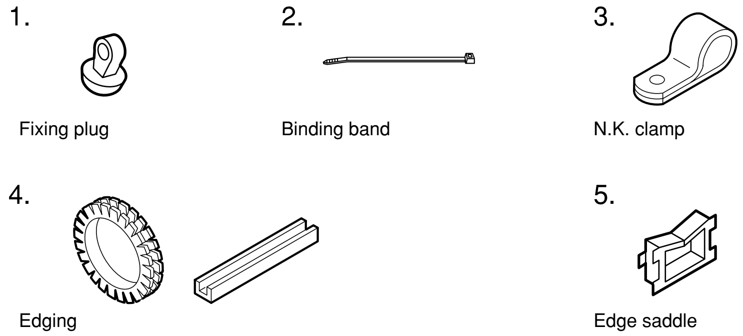
TR1Z0041.PCT

# 消耗品一覧表

# LIST OF QUICK WEARING PARTS

# 14

List Of Quick Wearing Parts

| No. | Part name | Shape |
|---|---|---|
| 1 | Fixing plug |  1.<br>Fixing plug<br>2.<br>Binding band<br>3.<br>N.K. clamp<br>4.<br>Edging<br>5.<br>Edge saddle<br>FR1Z0076.EPS |
| 2 | Binding band | |
| 3 | N.K. clamp | |
| 4 | Edging | |
| 5 | Edge saddle | |

TR1Z0042.EPS

# CR-IR346RU Service Manual

## Preventive Maintenance (PM)

# CR-IR346RU Service Manual – Contents

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  10.2 Side-Positioning Conveyor (Removing the Shock Absorbers) ........ PM-31
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  11.2 Subscanning Unit (Cleaning the Driven-Shaft Side Guide/Roller) ........ PM-37
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## Control Sheet

| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10/10/2000 | 00 | New release (FM2887) | All pages |
| 08/30/2001 | 01 | Support for software version A05 (FM3058) | PM-1, 2, 5, 8, 10–13, 15–17, 19, 25, 32–36, 44, 49, 50, 56 |

# 1. Preventive Maintenance Program

## 1.1 Preventive Maintenance Program List

The interval requirements that presume the standard count processed (100 films per day) are listed below.

| Reference section | Maintenance program | Interval requirements | | Time requirements | Periodic replacement parts | Remarks |
|---|---|---|---|---|---|---|
| | | Interval | Count processed | | | |
| 2.2 | Checking the error log | 1Y | | | | |
| 3 | Checking the image/conveyance | 1Y | | | | |
| 4 | Pulling out the machine | 1Y | | | | |
| 5 | Removing the covers | 1Y | | | | |
| 6 | Cleaning the air filters | 1Y | 30,000 | | | |
| | Replacing the air filters | 2Y | 60,000 | | Air filter | |
| 7 | Turning OFF the high-voltage switch | 1Y | | | | |
| 8.2 | Cleaning the suction cups | 1Y | 30,000 | | | |
| 8.3 | Cleaning the rollers | | | | | |
| 9.2 | Cleaning the reflection guide | 1Y | | | | |
| 9.3 | Cleaning the guide roller assembly | 1Y | | | | |
| 9.4 | Cleaning the cleaning rollers | 1Y | | | | |
| | Replacing the cleaning rollers | 2Y | 60,000 | | Cleaning roller | |
| 9.5 | Cleaning the erasure lamps/filter | 1Y | | | | |
| | Replacing the erasure lamps | 2Y | | | Erasure lamp | 1800 h |
| 9.6 | Cleaning the conveyance rollers | 1Y | | | | |
| 10.2 | Removing the shock absorbers | 1Y | | | | |
| 10.3 | Cleaning the guides/conveyance rollers | 1Y | | | | |
| 11.1 | Cleaning the cleaning brushes | 1Y | | | | |
| 11.2 | Cleaning the driven-shaft side guide/roller | 1Y | | | | |
| 11.3 | Cleaning the Kapton® belt | 1Y | | | | |
| 11.4 | Cleaning the flywheel/ light-collecting mirror/ lower rollers/guides | 1Y | | | | |
| 11.5 | Cleaning the light-collecting guide | 1Y | | | | |
| 11.6 | Cleaning the rubber belt | 1Y | | | | |
| 11.7 | Cleaning the driving-shaft side guide/rollers | 1Y | | | | |
| 12 | Cleaning inside the machine | 1Y | | | | |
| 13 | Turning ON the high-voltage switch | 1Y | | | | |
| 14 | Reinstalling and cleaning the covers | 1Y | | | | |
| 16 | Checking the image/conveyance | 1Y | | | | |
| 17 | Checking the error log | 1Y | | | | |
| 18 | Resetting the erasure lamp lighting time | 2Y | | | | |

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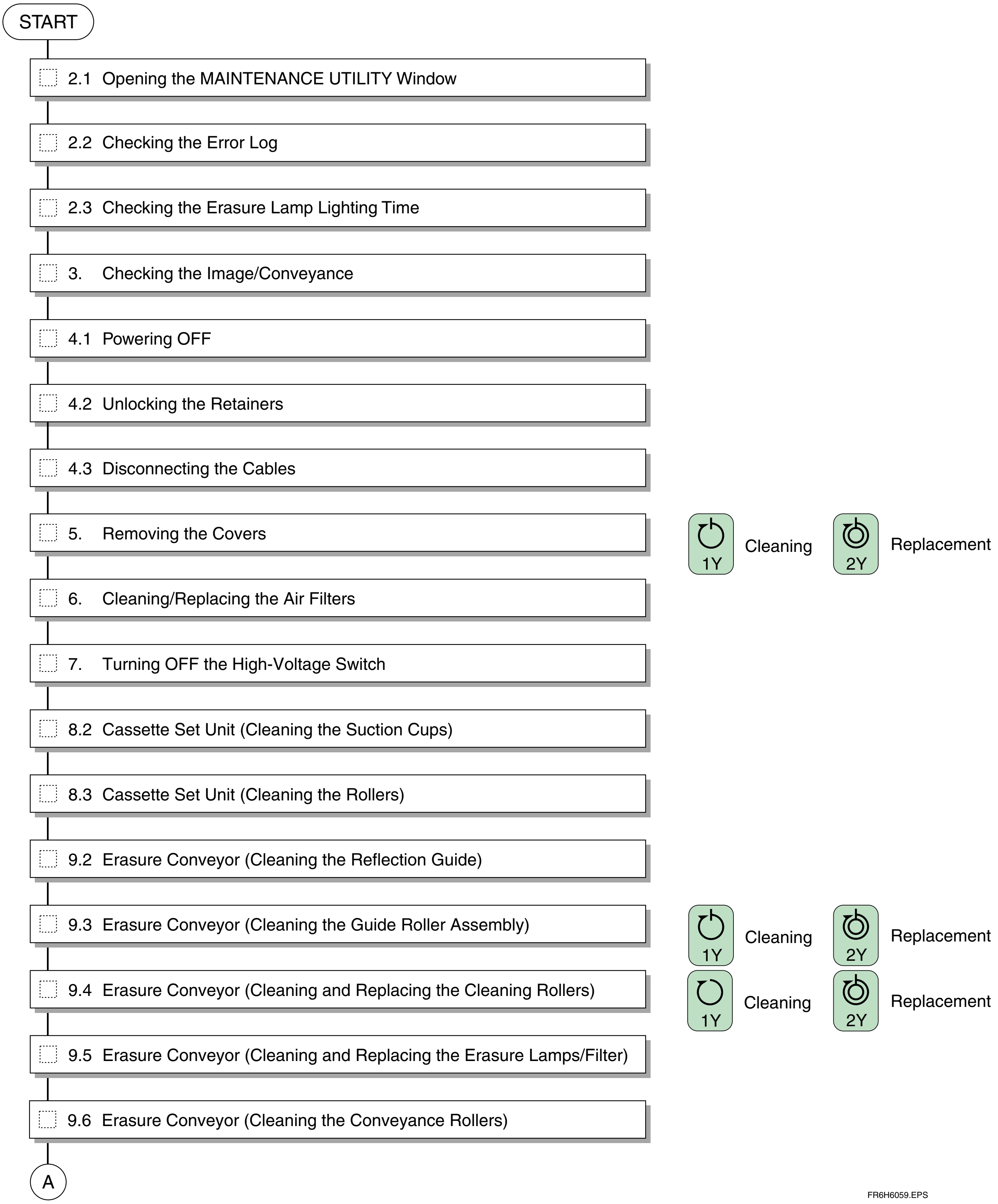
## 1.2 Notations of Intervals

In this volume, either of the following symbols is indicated for each maintenance program.

Before initiating any maintenance operation, you should become familiar with the following symbols.

| | |
|---|---|
| 1Y | Indicates a program that must be performed at 1Y (1 year) intervals or when the count processed has reached about 30,000. |
| 2Y | Indicates a program that must be performed at 2Y (2 year) intervals or when the count processed has reached about 60,000. |

## 1.3 Preventive Maintenance Flow


START
☐ 2.1 Opening the MAINTENANCE UTILITY Window
☐ 2.2 Checking the Error Log
☐ 2.3 Checking the Erasure Lamp Lighting Time
☐ 3. Checking the Image/Conveyance
☐ 4.1 Powering OFF
☐ 4.2 Unlocking the Retainers
☐ 4.3 Disconnecting the Cables
☐ 5. Removing the Covers
☐ 6. Cleaning/Replacing the Air Filters
1Y Cleaning
2Y Replacement
☐ 7. Turning OFF the High-Voltage Switch
☐ 8.2 Cassette Set Unit (Cleaning the Suction Cups)
☐ 8.3 Cassette Set Unit (Cleaning the Rollers)
☐ 9.2 Erasure Conveyor (Cleaning the Reflection Guide)
☐ 9.3 Erasure Conveyor (Cleaning the Guide Roller Assembly)
☐ 9.4 Erasure Conveyor (Cleaning and Replacing the Cleaning Rollers)
1Y Cleaning
2Y Replacement
☐ 9.5 Erasure Conveyor (Cleaning and Replacing the Erasure Lamps/Filter)
1Y Cleaning
2Y Replacement
☐ 9.6 Erasure Conveyor (Cleaning the Conveyance Rollers)
A

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A

☐ 10.2 Side-Positioning Conveyor (Removing the Shock Absorbers)

1Y Removal only for maintenance after first year of operation

☐ 10.3 Side-Positioning Conveyor (Cleaning the Guides/Conveyance Rollers)

☐ 11.1 Subscanning Unit (Cleaning the Cleaning Brushes)

☐ 11.2 Subscanning Unit (Cleaning the Driven-Shaft Side Guide/Roller)

☐ 11.3 Subscanning Unit (Cleaning the Kapton® Belt)

☐ 11.4 Subscanning Unit (Cleaning the Flywheel/Light-Collecting Mirror/ Lower Rollers/Guides)

☐ 11.5 Subscanning Unit (Cleaning the Light-Collecting Guide)

☐ 11.6 Subscanning Unit (Cleaning the Rubber Belt)

☐ 11.7 Subscanning Unit (Cleaning the Driving Shaft Side Guide/Rollers)

☐ 12. Cleaning Inside the Machine

☐ 13. Turning ON the High-Voltage Switch

☐ 14. Reinstalling and Cleaning the Covers

☐ 15.1 Connecting the Cables

☐ 15.2 Securing the Machine

☐ 16. Checking the Image/Conveyance

☐ 17. Checking the Error Log

☐ 18. Resetting the erasure lamp lighting time

END

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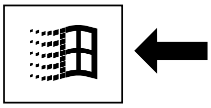
# 2. Details of Maintenance Procedures

## 2.1 Opening the MAINTENANCE UTILITY Window

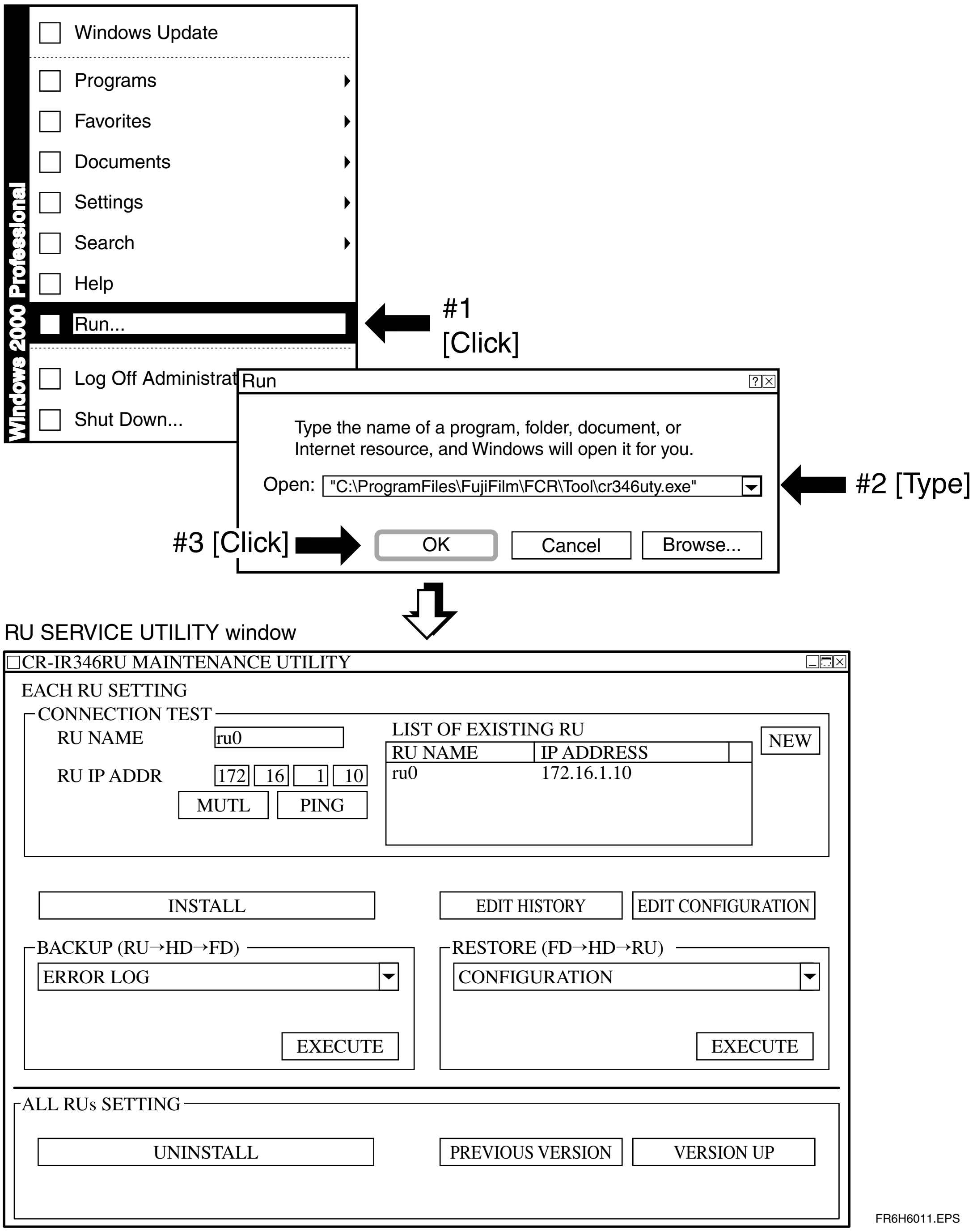
(1) Power ON the CL.

(2) Power ON the RU.

(3) Press the [Windows] key to display the Start menu of Windows.



(4) Select [Run...] from the Start menu of Windows, and type ["C:¥ProgramFiles¥FujiFilm¥FCR¥Tool¥cr346uty.exe"] to open the RU MAINTENANCE UTILITY window.


Windows 2000 Professional
☐ Windows Update
☐ Programs
☐ Favorites
☐ Documents
☐ Settings
☐ Search
☐ Help
☐ Run...
☐ Log Off Administrat
☐ Shut Down...
#1 [Click]
Run
#2 [Type]
#3 [Click]
OK
Cancel
Browse...
RU SERVICE UTILITY window
☐CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
MUTL
PING
LIST OF EXISTING RU
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU→HD→FD)
EXECUTE
RESTORE (FD→HD→RU)
EXECUTE
ALL RUs SETTING
UNINSTALL
PREVIOUS VERSION
VERSION UP

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: "C:\ProgramFiles\FujiFilm\FCR\Tool\cr346uty.exe"

RU NAME ru0

RU IP ADDR 172 16 1 10

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU→HD→FD): ERROR LOG

RESTORE (FD→HD→RU): CONFIGURATION

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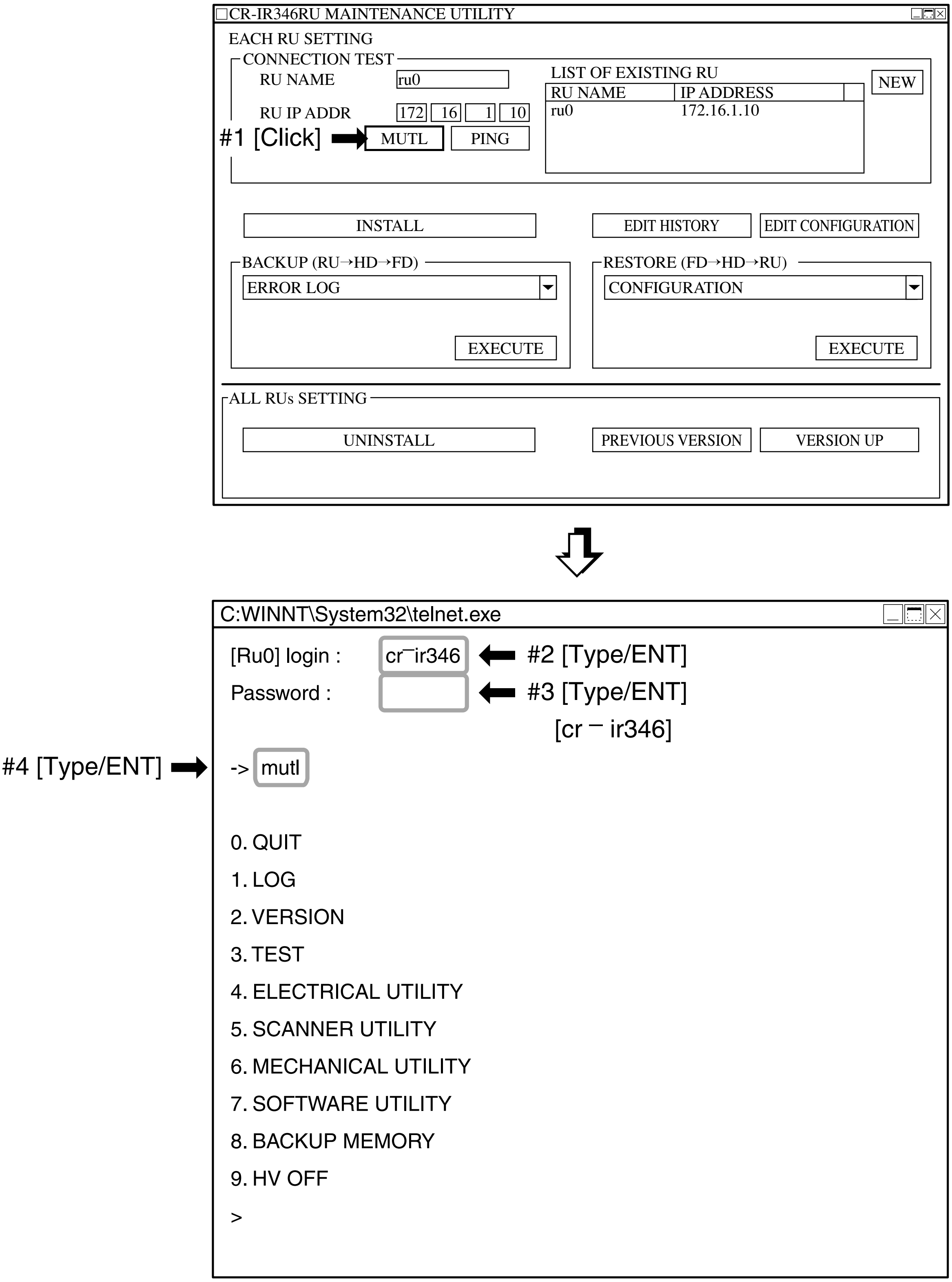
## 2.2 Checking the Error Log

### ■ Opening the WINNT\System32\telnet.exe Window

(1) Start the M-Utility.



CR-IR346RU MAINTENANCE UTILITY

EACH RU SETTING

CONNECTION TEST

RU NAME: ru0

RU IP ADDR: 172 16 1 10

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU→HD→FD): ERROR LOG

RESTORE (FD→HD→RU): CONFIGURATION

ALL RUs SETTING

#1 [Click]
MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
UNINSTALL
PREVIOUS VERSION
VERSION UP

C:WINNT\System32\telnet.exe

```
[Ru0] login :  cr¯ir346
Password :

-> mutl

0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
>
```

#2 [Type/ENT]

#3 [Type/ENT] [cr − ir346]

#4 [Type/ENT]

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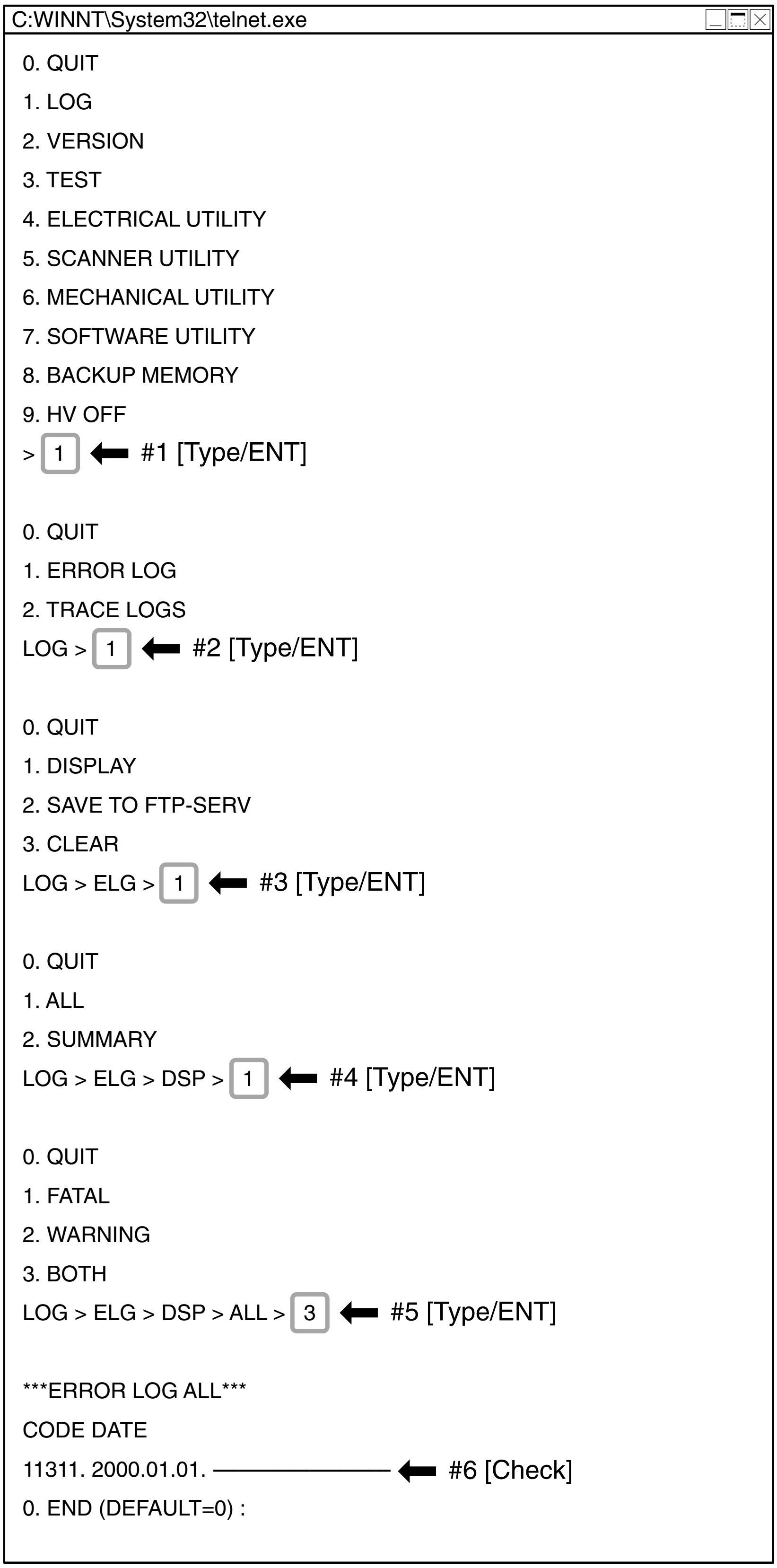
### ◇ REFERENCE ◇

*If no error logs exist, the following message appears.*
*THE LOG IS EMPTY.*
*RESULT: OK*

(2) Select the log to check the error log.



```
0. QUIT
1. LOG
2. VERSION
3. TEST
4. ELECTRICAL UTILITY
5. SCANNER UTILITY
6. MECHANICAL UTILITY
7. SOFTWARE UTILITY
8. BACKUP MEMORY
9. HV OFF
> 1  ⬅ #1 [Type/ENT]

0. QUIT
1. ERROR LOG
2. TRACE LOGS
LOG > 1  ⬅ #2 [Type/ENT]

0. QUIT
1. DISPLAY
2. SAVE TO FTP-SERV
3. CLEAR
LOG > ELG > 1  ⬅ #3 [Type/ENT]

0. QUIT
1. ALL
2. SUMMARY
LOG > ELG > DSP > 1  ⬅ #4 [Type/ENT]

0. QUIT
1. FATAL
2. WARNING
3. BOTH
LOG > ELG > DSP > ALL > 3  ⬅ #5 [Type/ENT]

***ERROR LOG ALL***
CODE DATE
11311. 2000.01.01. ――――――――  ⬅ #6 [Check]
0. END (DEFAULT=0) :
```

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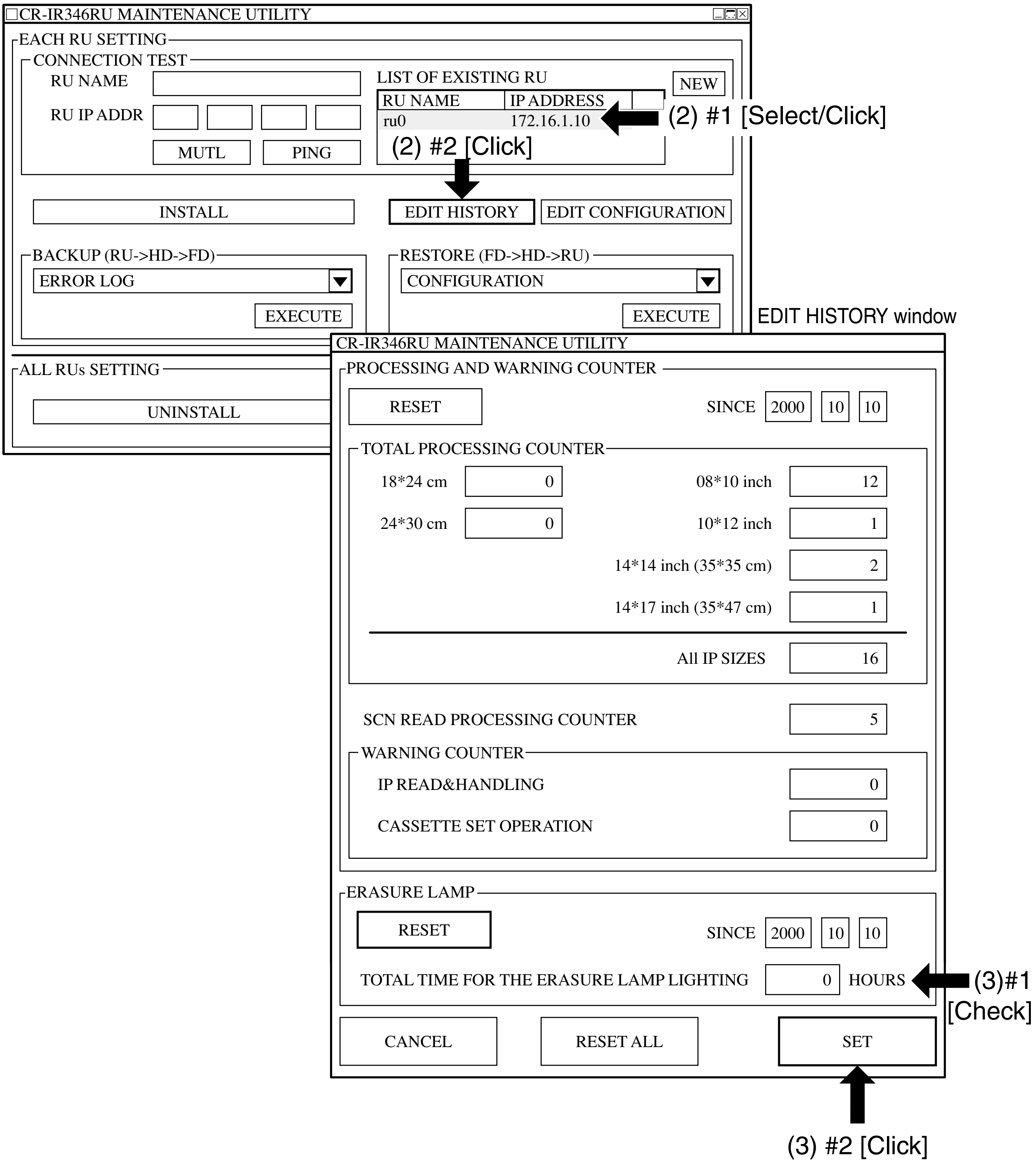
## 2.3 Checking the Erasure Lamp Lighting Time

(1) Open the MAINTENANCE UTILITY window.

(2) Open the EDIT HISTORY window.

(3) Check the erasure lamp lighting time.

MAINTENANCE UTILITY window


☐CR-IR346RU MAINTENANCE UTILITY
EACH RU SETTING
CONNECTION TEST
RU NAME
RU IP ADDR
MUTL
PING
NEW
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
BACKUP (RU->HD->FD)
RESTORE (FD->HD->RU)
EXECUTE
EXECUTE
ALL RUs SETTING
UNINSTALL
CR-IR346RU MAINTENANCE UTILITY
PROCESSING AND WARNING COUNTER
RESET
TOTAL PROCESSING COUNTER
WARNING COUNTER
ERASURE LAMP
RESET
CANCEL
RESET ALL
SET

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU->HD->FD): ERROR LOG

RESTORE (FD->HD->RU): CONFIGURATION

(2) #1 [Select/Click]

(2) #2 [Click]

EDIT HISTORY window

SINCE 2000 10 10

| | | | |
|---|---|---|---|
| 18*24 cm | 0 | 08*10 inch | 12 |
| 24*30 cm | 0 | 10*12 inch | 1 |
| | | 14*14 inch (35*35 cm) | 2 |
| | | 14*17 inch (35*47 cm) | 1 |
| | | All IP SIZES | 16 |

SCN READ PROCESSING COUNTER 5

IP READ&HANDLING 0

CASSETTE SET OPERATION 0

SINCE 2000 10 10

TOTAL TIME FOR THE ERASURE LAMP LIGHTING 0 HOURS

(3)#1 [Check]

(3) #2 [Click]

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# 3. Checking the Image/Conveyance

The following checks are made in this section.

- Check for nonuniformity, sensitivity, and conveyance
- Check for format
- Check for output characters

## ■ Preparation Procedures

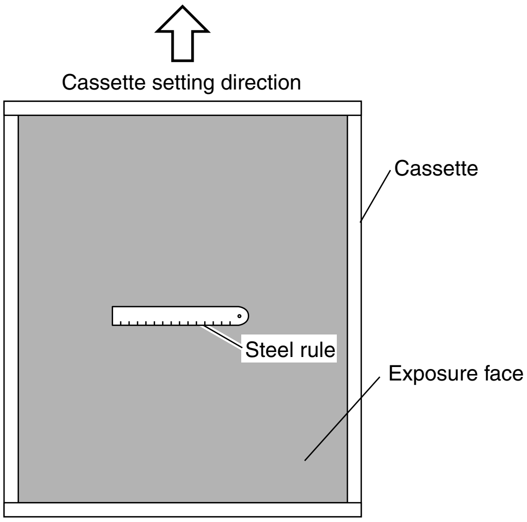
◆ ***NOTES*** ◆

- *Use IPs of all sizes used in the hospital for checking the image/conveyance. Note, however, that the IP type to be used should be the VI type.*
- *Make sure that no important data has been exposed on the IP to be used.*

(1) Erase the natural radiation and image accumulated on the IP to be used.

☞ "RU Instruction Manual/2.4 When Only Image Erasure is to be Performed (Primary Erasure)"

(2) Place a steel rule (150-mm) on the cassette and expose it at 1 mR.



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◆ ***NOTE*** ◆

*If the IP cannot be exposed at 1 mR, it should be exposed at a level equivalent to 1 mR, with reference to the following exposure conditions.*
*Note, however, that those conditions are for standard IP setup reference.*

*Distance: 1.8 m*
*Voltage: 80 kV*
*Amperage: 50 mA*
*Time: 0.013 sec*

### ■ Outputting the Film for Image Check

◆ ***NOTES*** ◆

- *The film to be outputted is used to check nonuniformity/sensitivity, format, and output characters.*
- *The trimming function should be disabled.*
  ☞ *"CL Service Manual/Function-specific Reference/2. Setup Necessary When Editing the Film Annotation Character Format"*

(1) Output the image exposed at 1 mR.

At this time, check to see that the IP conveyance mechanism of the RU is operating normally.

☞ "RU Instruction Manual/2. Operating Procedures"

◆ ***CHECKS*** ◆

- *There should be no offensive noise or odor.*
- *There should be no IP jam.*
- *After reading, the IP should be free from any scratch or damage.*
  *If anything abnormal is found, see [Troubleshooting Volume].*

## 3.1 Checking Nonuniformity/Sensitivity

(1) Make sure that there is no unusual nonuniformity found on the output film and on the image displayed on the image monitor.

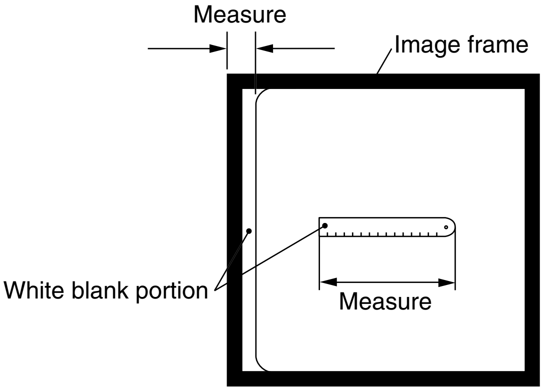
◆ ***CHECKS*** ◆

*There should be no unusual nonuniformity.*
*If anything abnormal is found, see [Troubleshooting Volume].*

## 3.2 Checking the Format

For this check, the format misalignment is verified.

(1) Using the output film, measure the white blank portion.



FR6H6018.EPS

◆ ***CHECK*** ◆

- *Make sure that the white blank portion is 2 mm or less.*
- *When the dimension of the white blank portion of the steel rule is converted to its actual dimension, the difference between the resulting value and the actual steel rule should be 2% or less.*

*If anything abnormal is found, see [Troubleshooting Volume].*

## 3.3 Checking the Output Characters

Make sure that the film character format information that was set in “Outputting the Film for Image Check” is displayed on the output film. Also verify that none of the characters look blurred or broken.

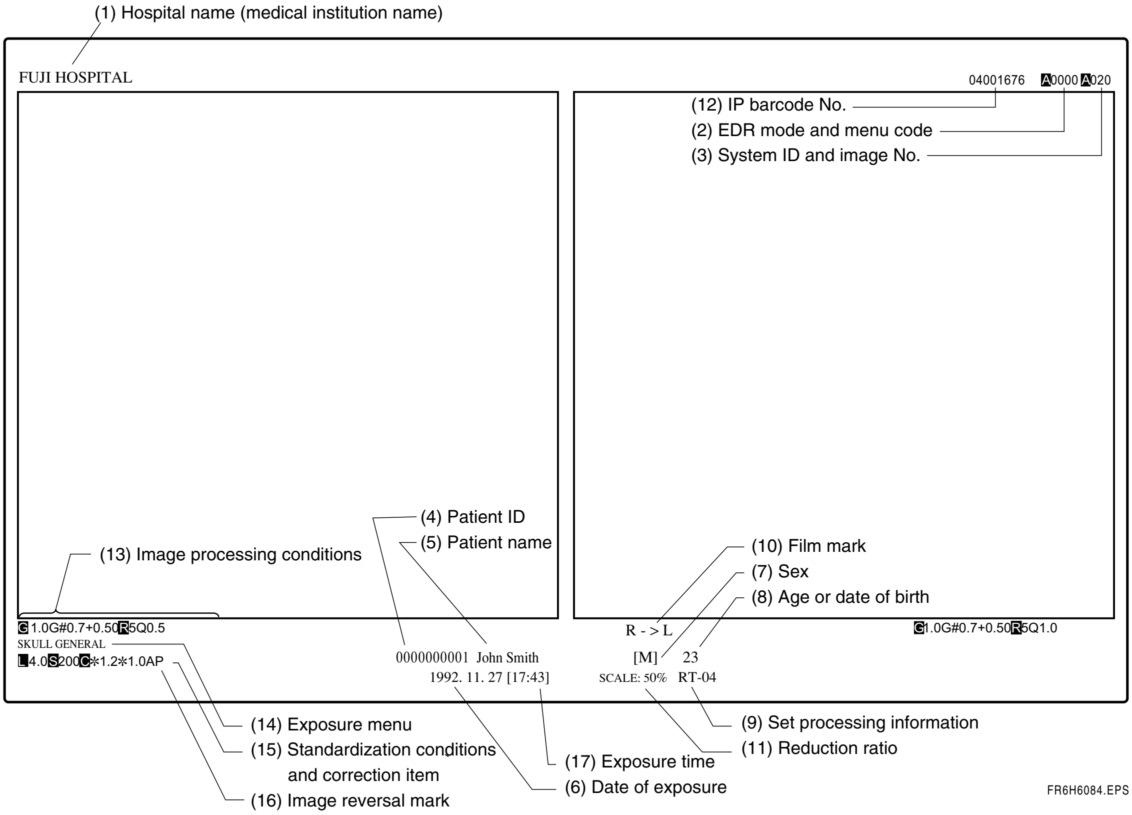
(1) Check the output characters.

**◆ *CHECKS* ◆**

*• Make sure that the character format information that was set is correct.*
*• Check for anything abnormal, such as blurred or broken characters.*
*If anything abnormal is found, see [Troubleshooting Volume].*

**◇ *REFERENCE* ◇**

*The details of output characters and the character display locations are as follows.*


(1) Hospital name (medical institution name)
FUJI HOSPITAL
04001676
A0000 A020
(12) IP barcode No.
(2) EDR mode and menu code
(3) System ID and image No.
(4) Patient ID
(5) Patient name
(13) Image processing conditions
(10) Film mark
(7) Sex
(8) Age or date of birth
G1.0G#0.7+0.50R5Q0.5
SKULL GENERAL
L4.0S200C✻1.2✻1.0AP
0000000001 John Smith
1992. 11. 27 [17:43]
R - > L
[M] 23
SCALE: 50% RT-04
G1.0G#0.7+0.50R5Q1.0
(14) Exposure menu
(15) Standardization conditions and correction item
(16) Image reversal mark
(17) Exposure time
(6) Date of exposure
(9) Set processing information
(11) Reduction ratio
FR6H6084.EPS

# 4. Pulling Out the Machine

## 4.1 Powering OFF

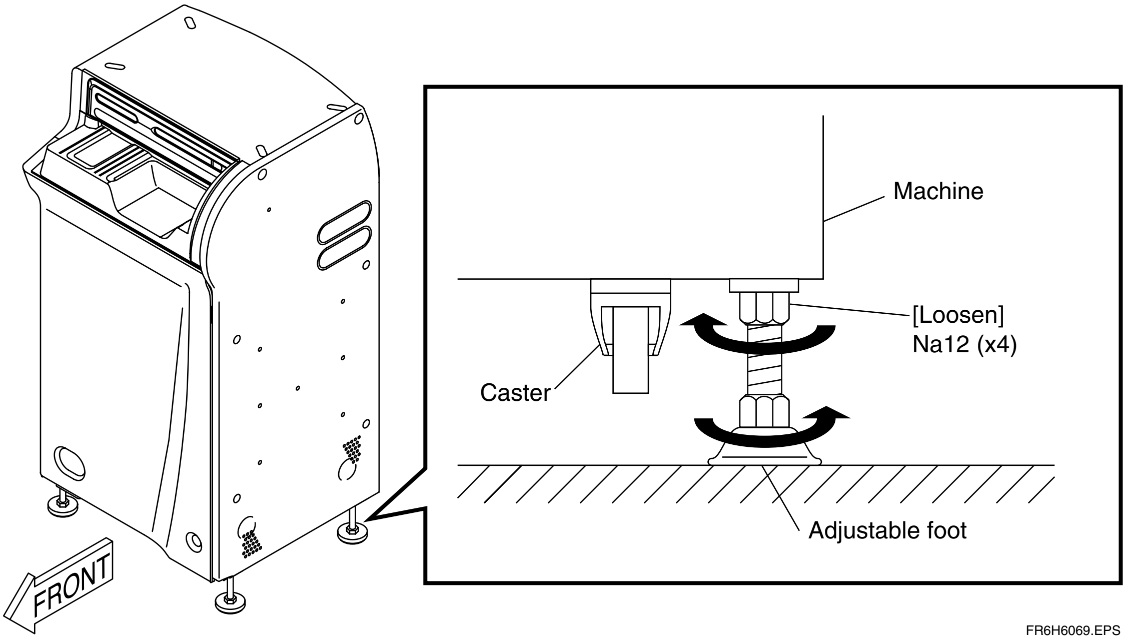
(1) Power OFF the CL.

(2) Power OFF the RU.

## 4.2 Unlocking the Retainers

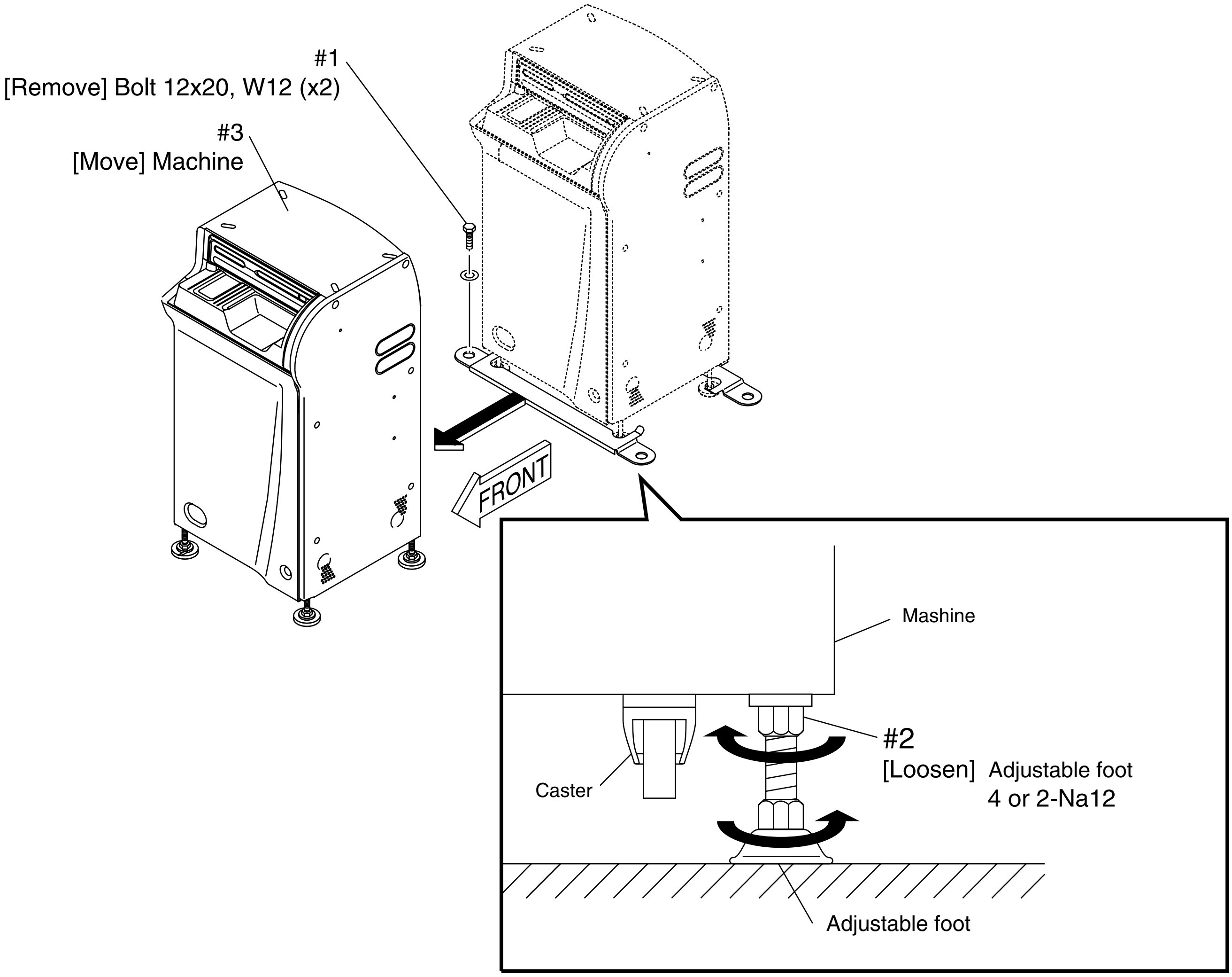
The procedures for unlocking the retainers vary depending on how the machine is retained. Take steps with reference to the relevant procedures.

### ■ When the Machine is Secured by the Adjustable Feet


FRONT
Machine
[Loosen]
Na12 (x4)
Caster
Adjustable foot

FR6H6069.EPS

## ■ When the Machine is Secured by the Retainers


#1
[Remove] Bolt 12x20, W12 (x2)
#3
[Move] Machine
FRONT
Mashine
#2
[Loosen] Adjustable foot
4 or 2-Na12
Caster
Adjustable foot

FR6H6065.EPS

### ◆ NOTES ◆

*When securing the adjustable feet, pay attention to the following points.*

*•The four adjustable feet should be evenly loaded.*

*However, if there is too little space on the right and left sides in the machine installation place to secure the adjustable feet on the rear side, the two adjustable feet on the front side should be secured in place. In this case, the two adjustable feet and two casters should be evenly loaded.*

*• When the adjustable feet are secured, the casters should be detached from the floor.*

## ■ When the Machine is Secured by the Table

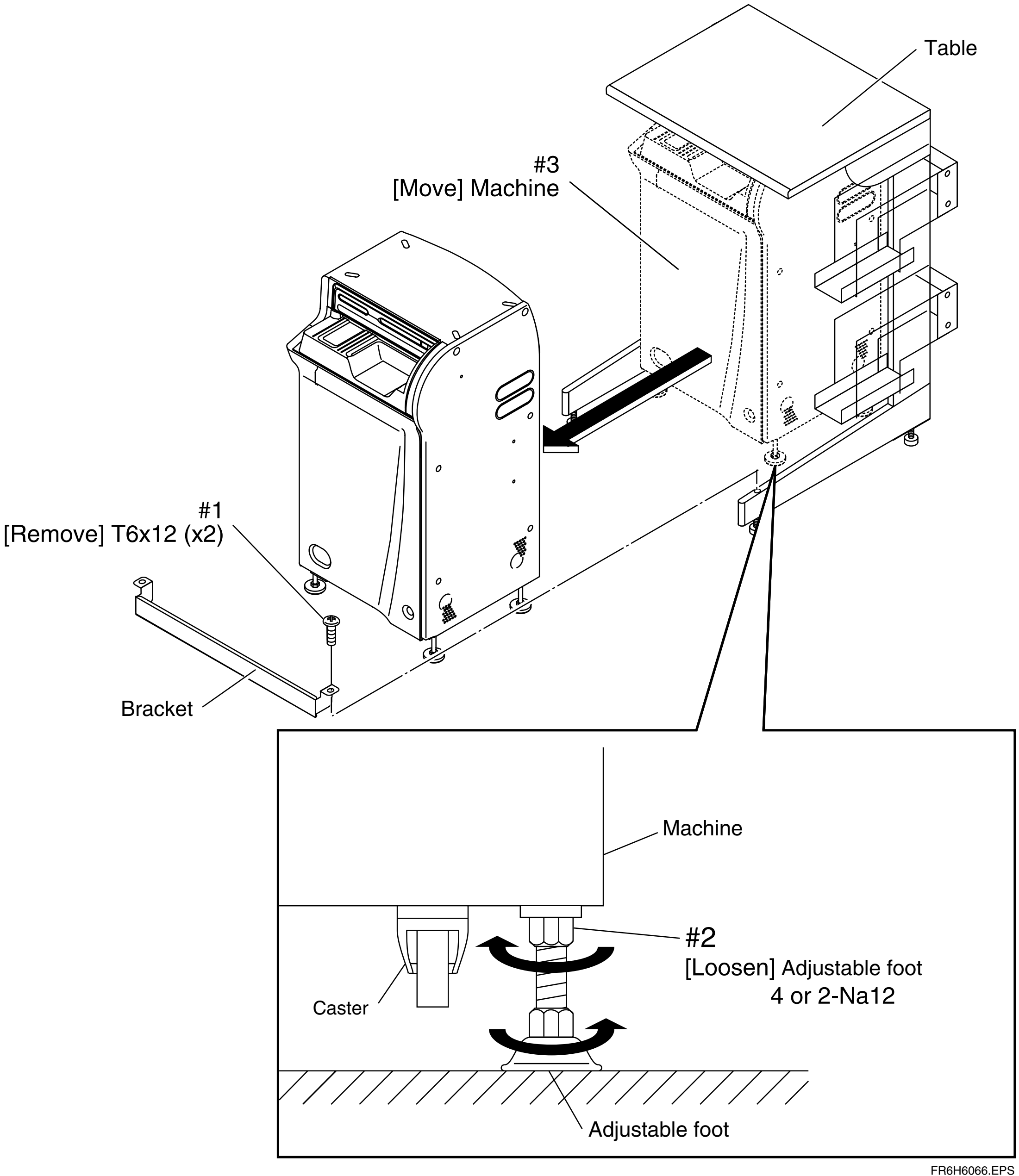


Table
#3
[Move] Machine
#1
[Remove] T6x12 (x2)
Bracket
Machine
#2
[Loosen] Adjustable foot
4 or 2-Na12
Caster
Adjustable foot
FR6H6066.EPS

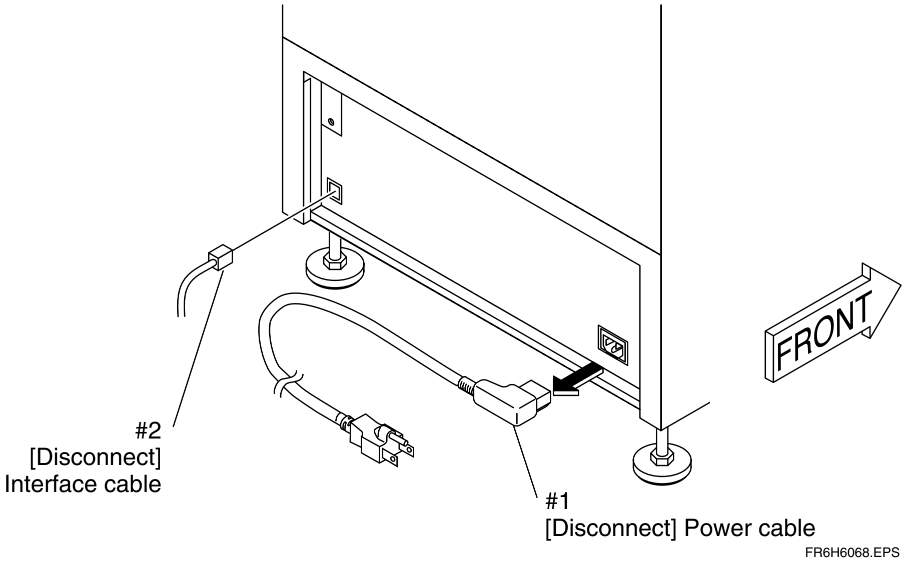
◆ ***NOTES*** ◆

*When securing the adjustable feet, pay attention to the following points.*

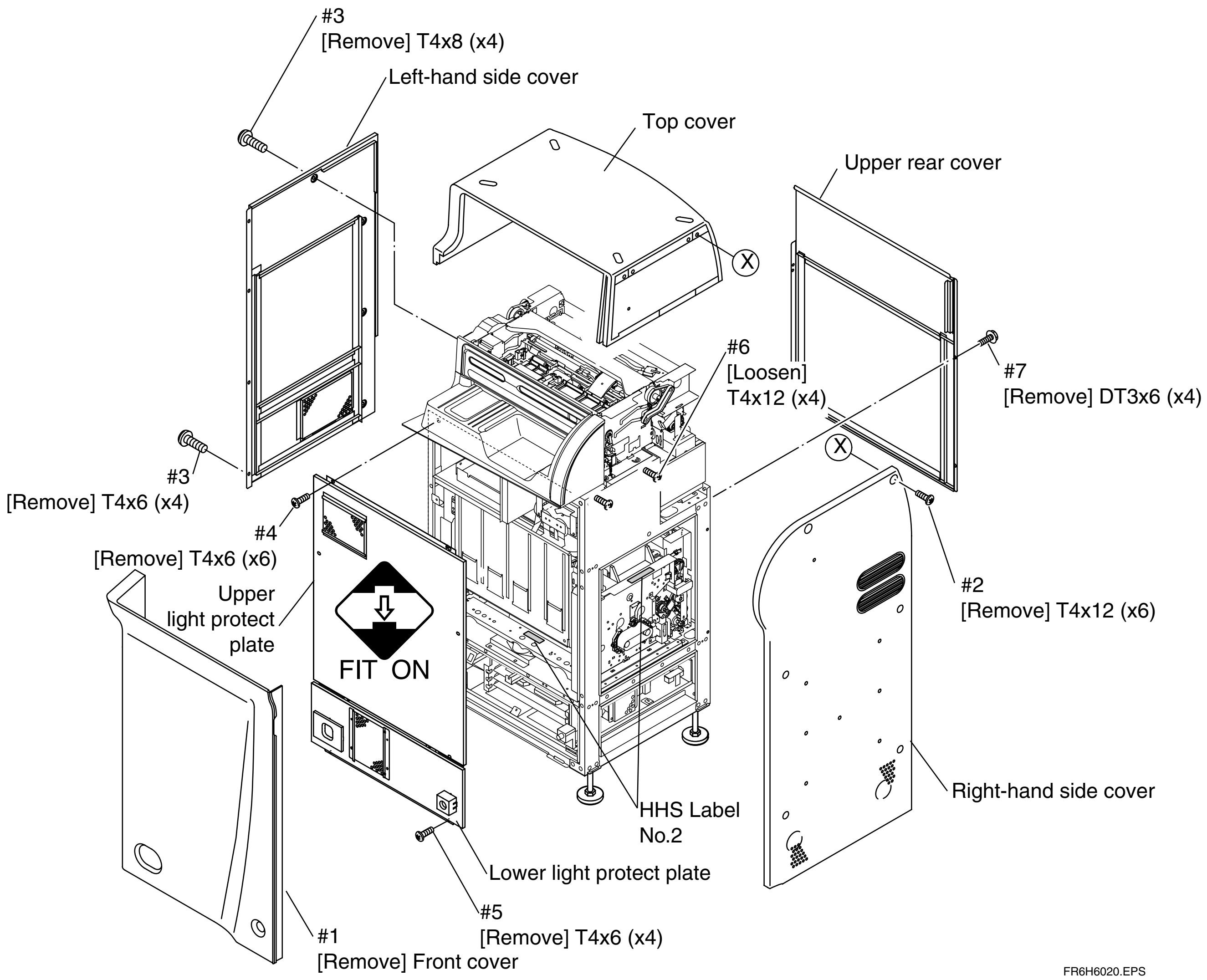
- *The four adjustable feet should be evenly loaded.*
  *However, if there is too little space on the right and left sides in the machine installation place to secure the adjustable feet on the rear side, the two adjustable feet on the front side should be secured in place. In this case, the two adjustable feet and two casters should be evenly loaded.*
- *When the adjustable feet are secured, the casters should be detached from the floor.*

## 4.3 Disconnecting the Cables

(1) Disconnect the power cable and interface cable.


FRONT
#2
[Disconnect]
Interface cable
#1
[Disconnect] Power cable
FR6H6068.EPS

# 5. Removing the Covers

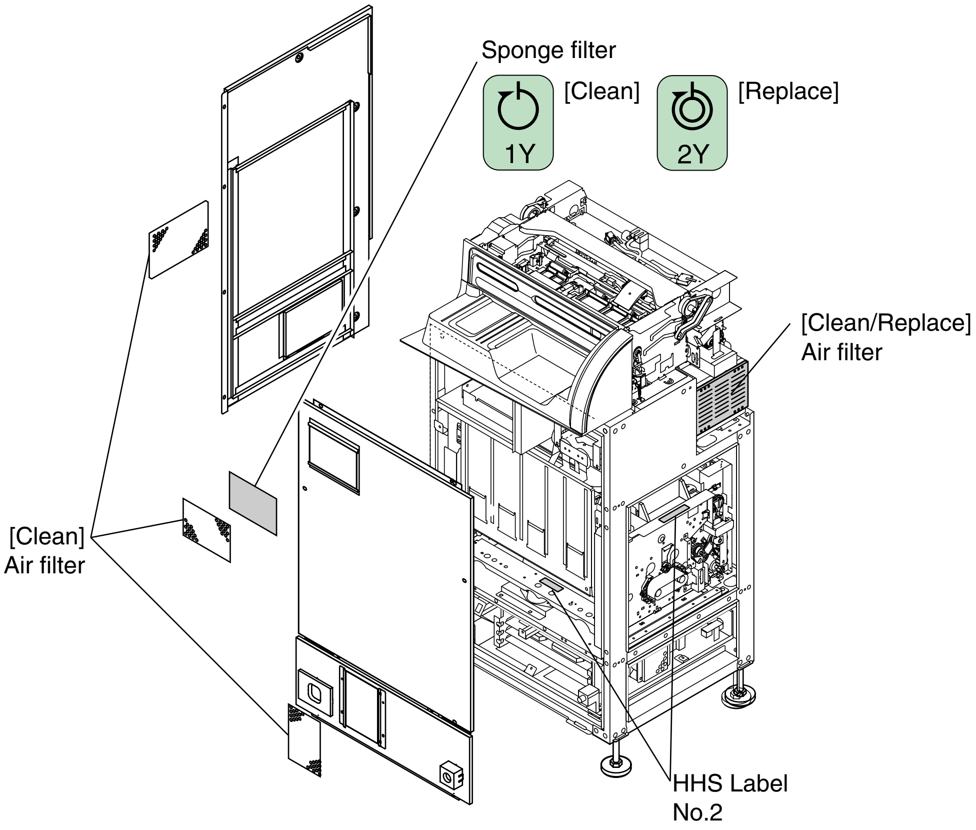

#3
[Remove] T4x8 (x4)
Left-hand side cover
Top cover
Upper rear cover
X
#6
[Loosen]
T4x12 (x4)
#7
[Remove] DT3x6 (x4)
X
#3
[Remove] T4x6 (x4)
#4
[Remove] T4x6 (x6)
Upper
light protect
plate
FIT ON
#2
[Remove] T4x12 (x6)
Right-hand side cover
HHS Label
No.2
Lower light protect plate
#5
[Remove] T4x6 (x4)
#1
[Remove] Front cover
FR6H6020.EPS

# 6. Cleaning/Replacing the Air Filters

Clean or replace the air filters.

1Y When one year has passed or when 30,000 IPs have been processed
→ The air filters should be cleaned.

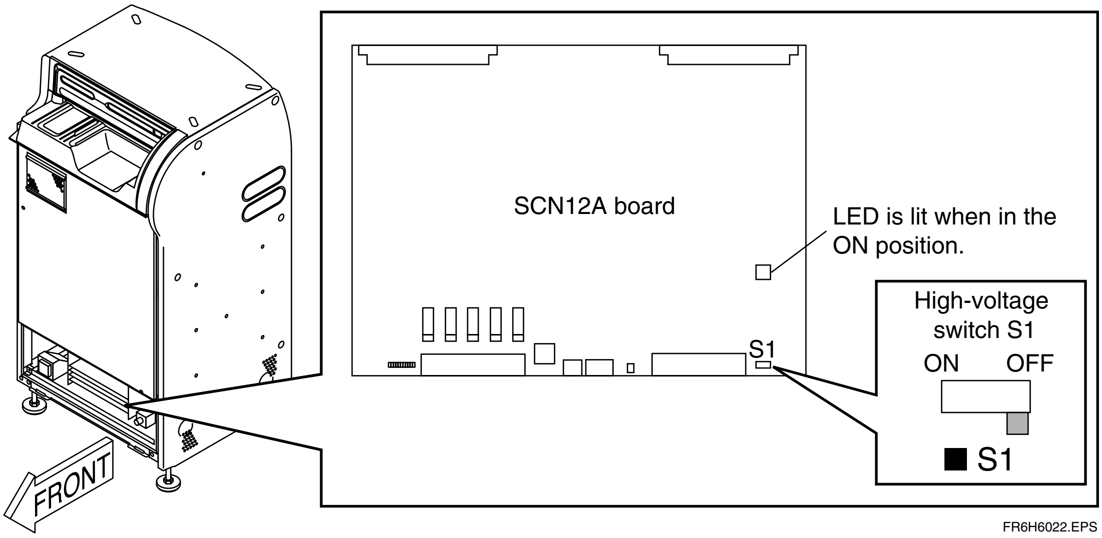
2Y When two years have passed or when 60,000 IPs have been processed
→ The air filters should be replaced.


Sponge filter
1Y
[Clean]
2Y
[Replace]
[Clean/Replace]
Air filter
[Clean]
Air filter
HHS Label
No.2

FR6H6021.EPS

# 7. Turning OFF the High-Voltage Switch

(1) Turn OFF the high-voltage switch.


FRONT
SCN12A board
LED is lit when in the ON position.
S1
High-voltage switch S1
ON
OFF
■ S1

FR6H6022.EPS

# 8. Cassette Set Unit

To gain access to the locations to be cleaned, the suction cup assembly should be removed.

## 8.1 Removing the Cassette Set Unit

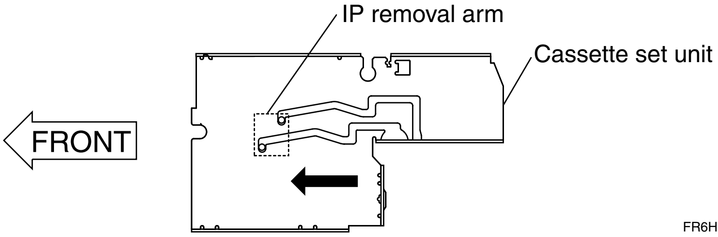
(1) Remove the suction cup assembly.

**CAUTION**

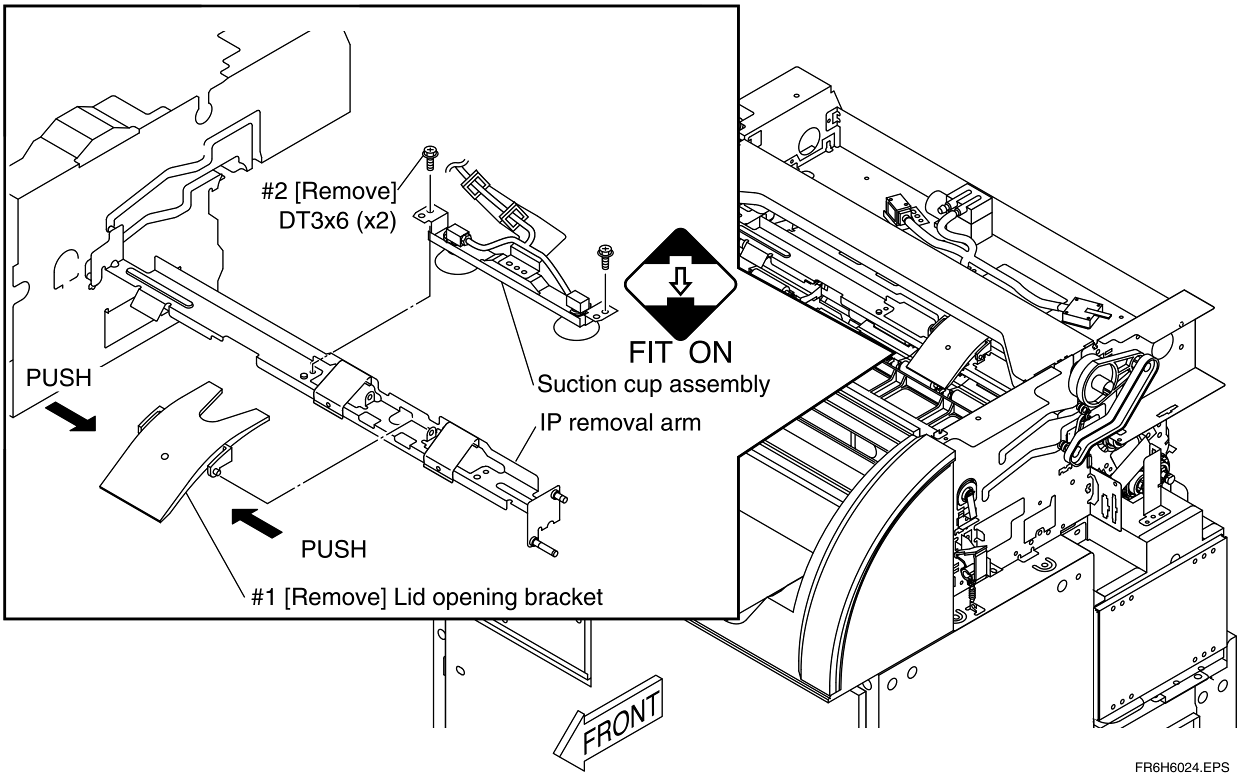
*When installing or removing the suction cup assembly, support the IP removal arm by hand.*
*If the procedures are performed without supporting it, the IP removal arm may be bent or otherwise damaged.*

**◇ REFERENCE ◇**

*Move the IP removal arm to the IP suction position before proceeding to the next step.*


IP removal arm
Cassette set unit
FRONT

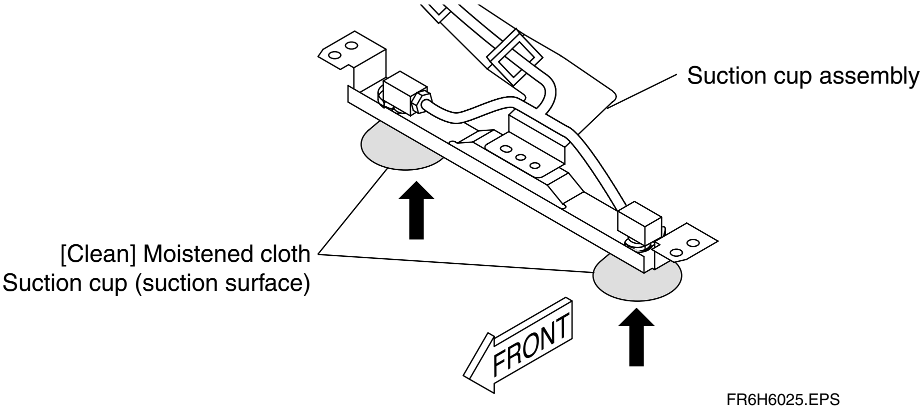
FR6H6076.EPS


#2 [Remove]
DT3x6 (x2)
FIT ON
Suction cup assembly
IP removal arm
PUSH
PUSH
#1 [Remove] Lid opening bracket
FRONT

FR6H6024.EPS

## 8.2 Cassette Set Unit (Cleaning the Suction Cups)

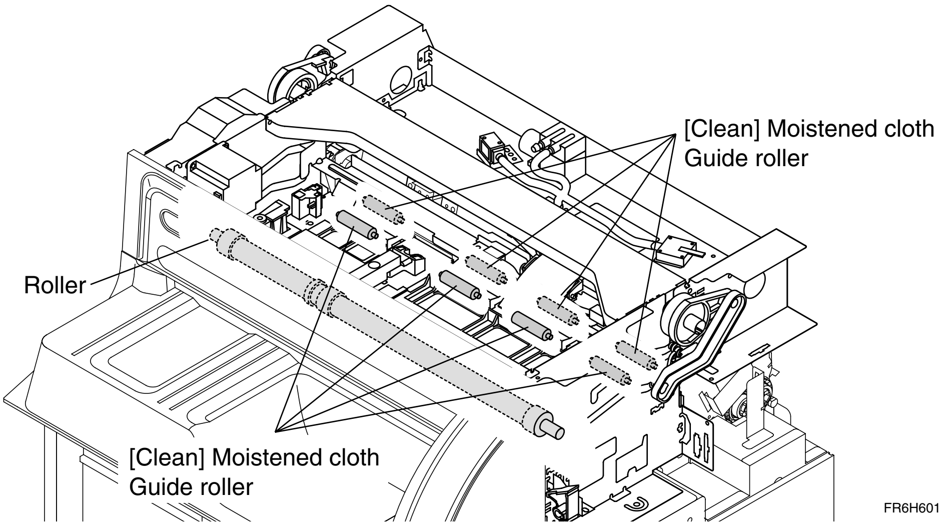
(1) Clean the suction cups (suction surfaces) with a moistened cloth.


Suction cup assembly
[Clean] Moistened cloth
Suction cup (suction surface)
FRONT

FR6H6025.EPS

## 8.3 Cassette Set Unit (Cleaning the Rollers)

(1) Clean the rollers and guide rollers with a moistened cloth.


[Clean] Moistened cloth
Guide roller
Roller
[Clean] Moistened cloth
Guide roller

FR6H6010.EPS

## 8.4 Reinstalling the Cassette Set Unit

(1) For reinstallation, reverse the procedures described in “8.1 Removing the Cassette Set Unit.”

# 9. Erasure Conveyor

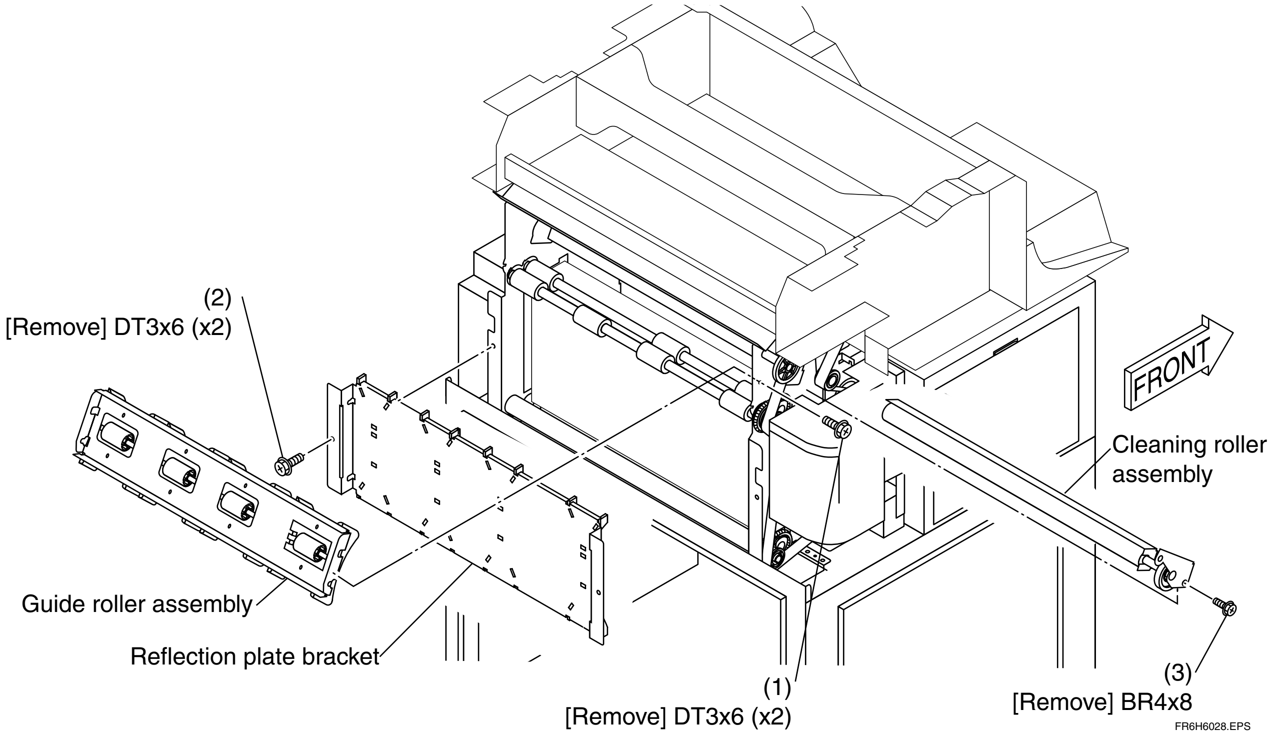
To gain access to the locations to be cleaned, each section of the erasure conveyor should be removed.

## 9.1 Removing the Erasure Conveyor

(1) Remove the guide roller assembly.

(2) Remove the reflection plate bracket.

(3) Remove the cleaning roller assembly.

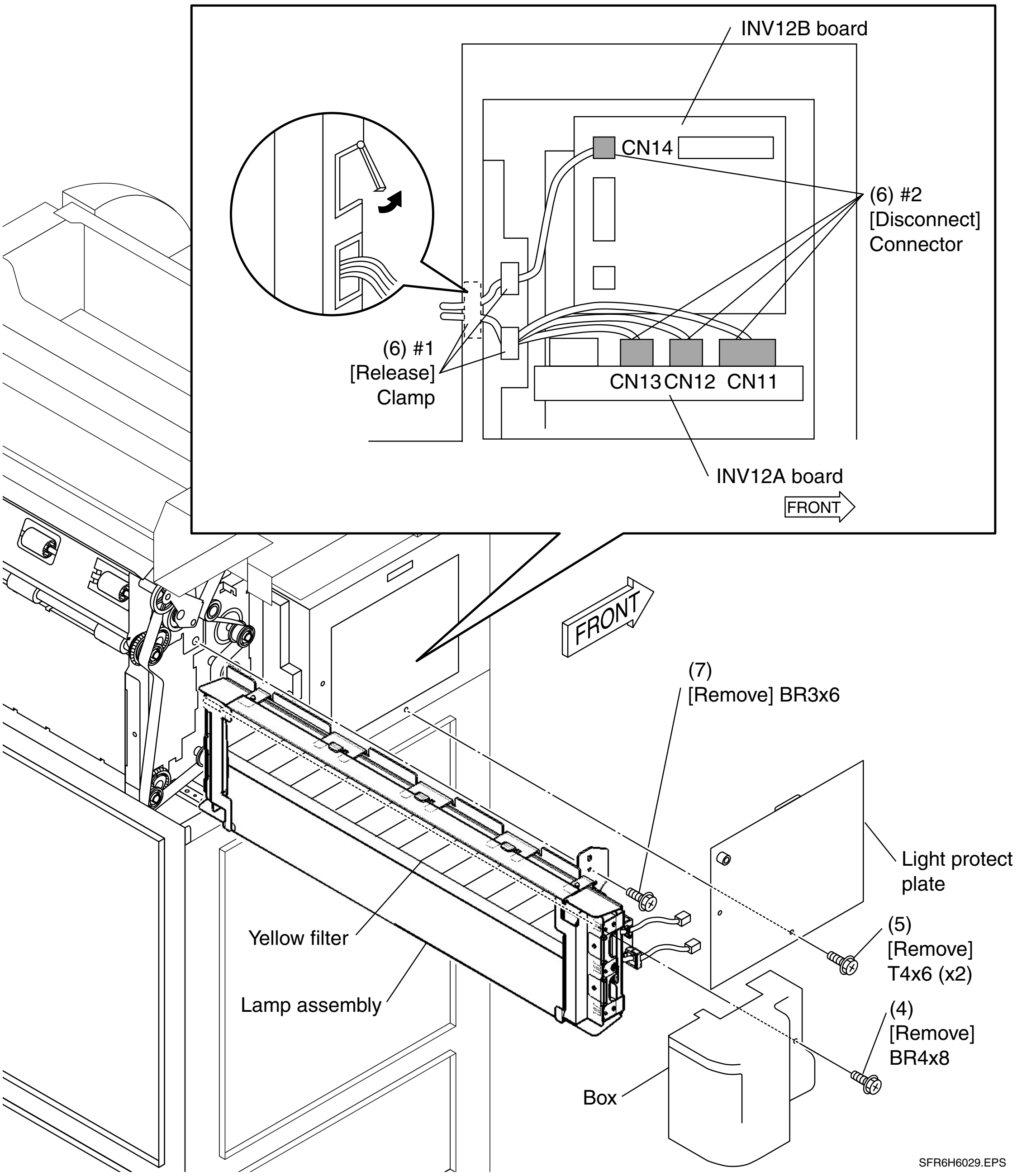

(2)
[Remove] DT3x6 (x2)
FRONT
Cleaning roller assembly
Guide roller assembly
Reflection plate bracket
(1)
[Remove] DT3x6 (x2)
(3)
[Remove] BR4x8
FR6H6028.EPS

(4) Remove the box.

(5) Remove the light protect plate.

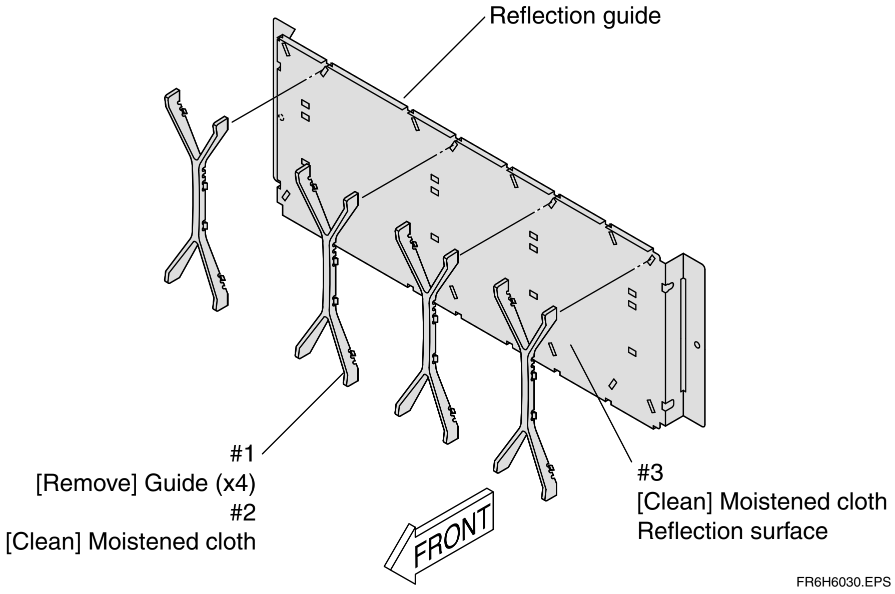
(6) Disconnect the connectors.

(7) Remove the lamp assembly.


INV12B board
CN14
(6) #2
[Disconnect]
Connector
(6) #1
[Release]
Clamp
CN13
CN12
CN11
INV12A board
FRONT
FRONT
(7)
[Remove] BR3x6
Light protect
plate
(5)
[Remove]
T4x6 (x2)
(4)
[Remove]
BR4x8
Yellow filter
Lamp assembly
Box
SFR6H6029.EPS

## 9.2 Erasure Conveyor (Cleaning the Reflection Guide)

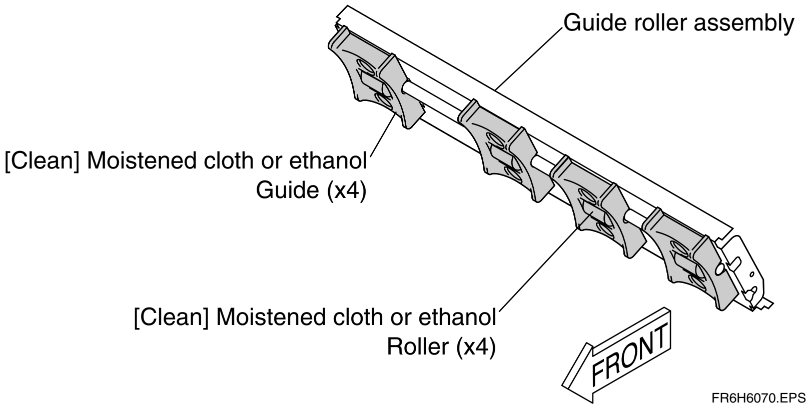
(1) Clean the reflection surface of the reflection guide, as well as the guides attached thereto, with a moistened cloth.


Reflection guide
#1
[Remove] Guide (x4)
#2
[Clean] Moistened cloth
FRONT
#3
[Clean] Moistened cloth
Reflection surface
FR6H6030.EPS

(2) Reinstall the guides.

## 9.3 Erasure Conveyor (Cleaning the Guide Roller Assembly)

(1) Clean the rollers and guides of the guide roller assembly with a moistened cloth or ethanol.

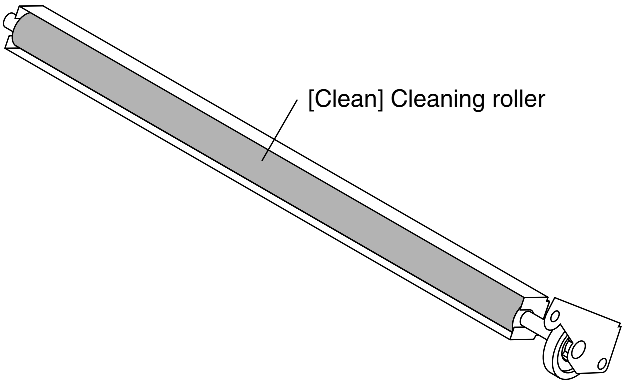

Guide roller assembly
[Clean] Moistened cloth or ethanol
Guide (x4)
[Clean] Moistened cloth or ethanol
Roller (x4)
FRONT
FR6H6070.EPS

## 9.4 Erasure Conveyor (Cleaning and Replacing the Cleaning Rollers)

(1) Clean or replace the cleaning rollers.

1Y

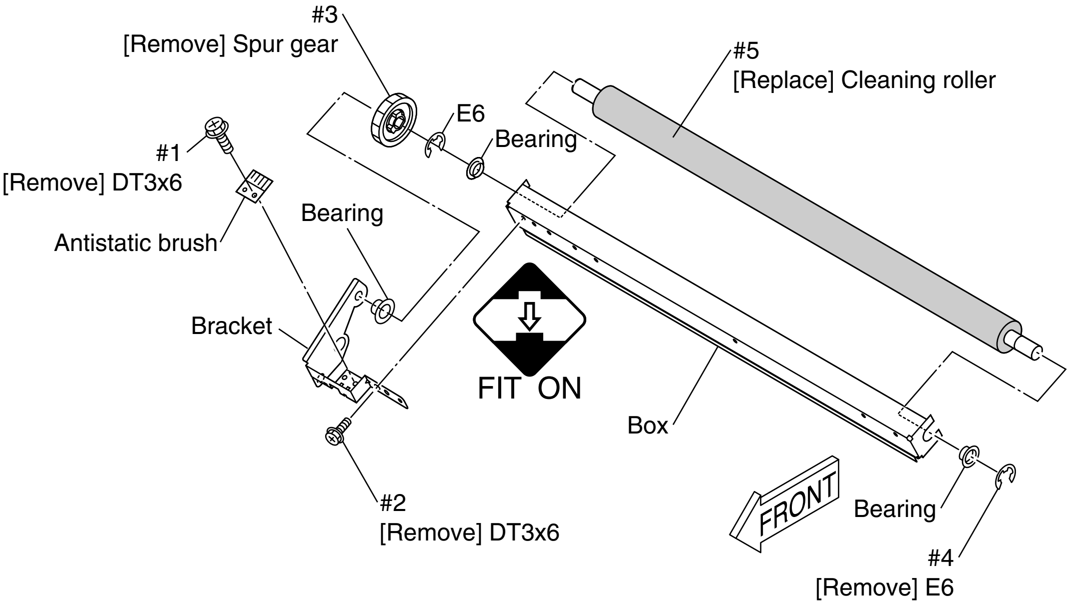
When one year has passed or when 30,000 IPs have been processed
→ The cleaning rollers should be cleaned.


[Clean] Cleaning roller

FR6H6078.EPS

2Y

When two years have passed or when 60,000 IPs have been processed
→ The cleaning rollers should be replaced.


#3
[Remove] Spur gear
#5
[Replace] Cleaning roller
E6
Bearing
#1
[Remove] DT3x6
Bearing
Antistatic brush
Bracket
FIT ON
Box
#2
[Remove] DT3x6
FRONT
Bearing
#4
[Remove] E6

FR6H6031.EPS

(2) Reassemble the cleaning roller assembly.
When the cleaning roller is replaced, reverse its removal procedures.

## 9.5 Erasure Conveyor (Cleaning and Replacing the Erasure Lamps and Filter)

(1) Clean the erasure lamps with a moistened cloth.

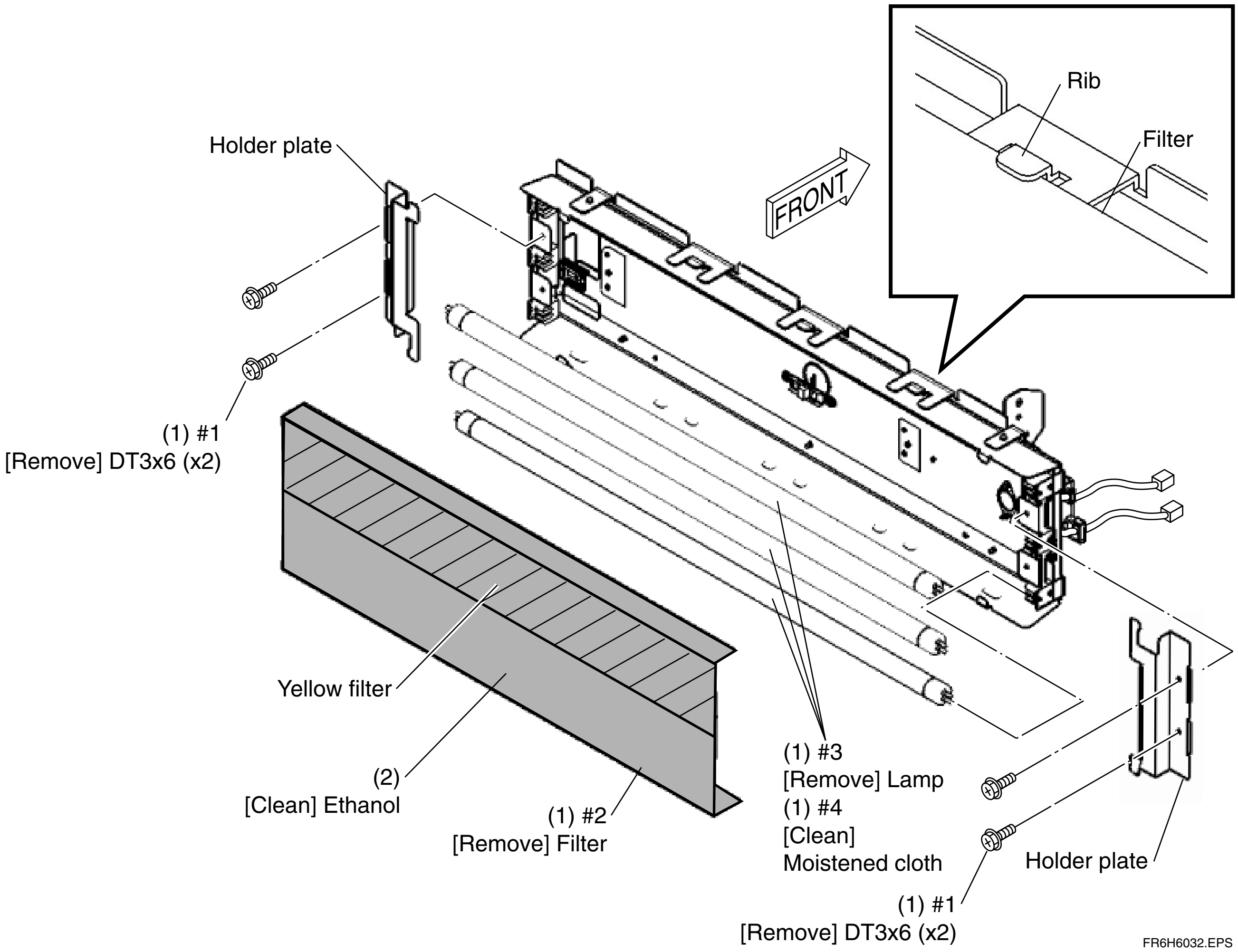
1Y When one year has passed or when the lamps have been lit for about 900 hours

→ The erasure lamps should be cleaned.

2Y When two years have passed or when 1,800 hours have been exceeded, the erasure lamps should be replaced.

If the lamp-on time has exceeded 1,800 hours or if two years have passed since the start of use, the lamps should be replaced with new ones.

(2) Clean the filter with an ethanol-moistened cloth.

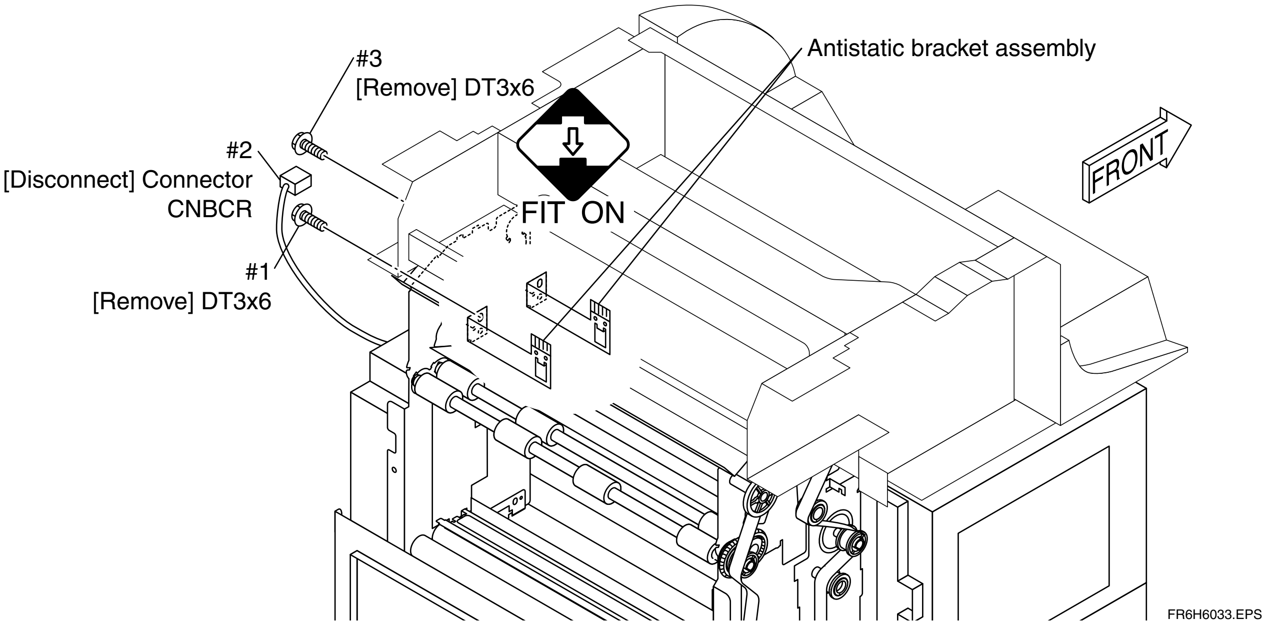

Rib
Filter
FRONT
Holder plate
(1) #1
[Remove] DT3x6 (x2)
Yellow filter
(2)
[Clean] Ethanol
(1) #2
[Remove] Filter
(1) #3
[Remove] Lamp
(1) #4
[Clean]
Moistened cloth
Holder plate
(1) #1
[Remove] DT3x6 (x2)

FR6H6032.EPS

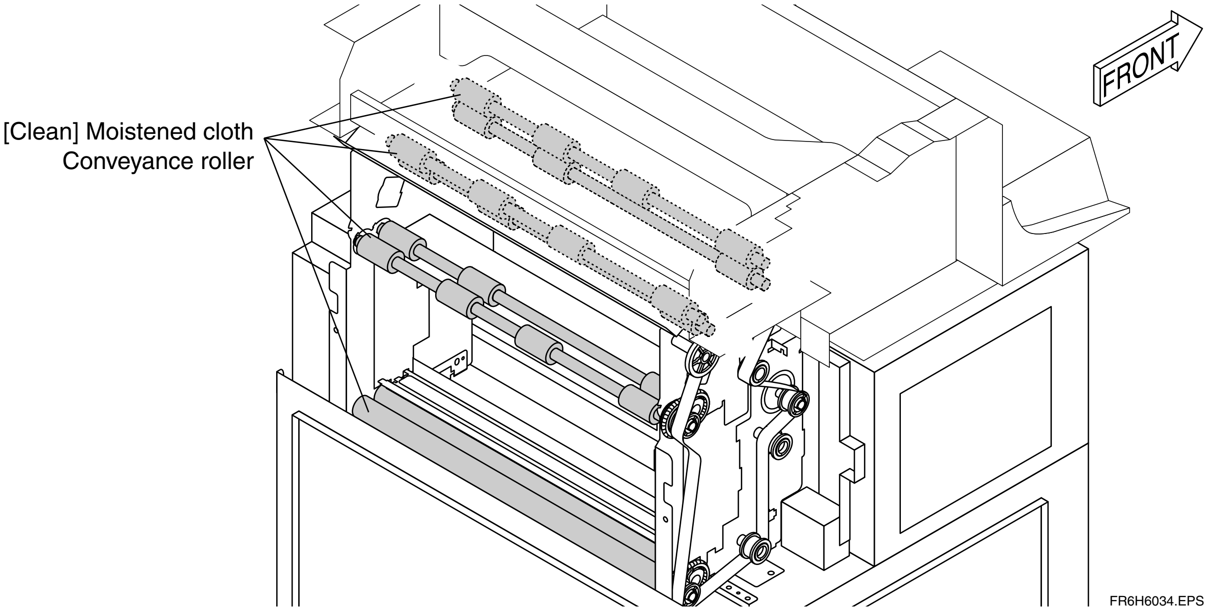
(3) Reassemble the erasure lamp assembly by reversing the procedures of step (2).

## 9.6 Erasure Conveyor (Cleaning the Conveyance Rollers)

(1) Remove the antistatic bracket assembly.


#3
[Remove] DT3x6
Antistatic bracket assembly
#2
[Disconnect] Connector
CNBCR
FIT ON
FRONT
#1
[Remove] DT3x6
FR6H6033.EPS

(2) Clean the conveyance rollers


FRONT
[Clean] Moistened cloth
Conveyance roller
FR6H6034.EPS

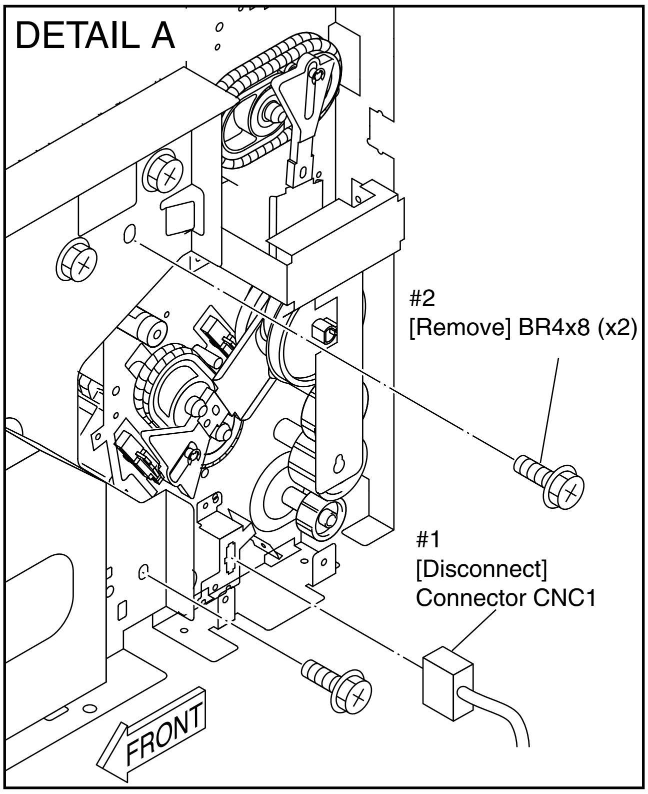
(3) Reinstall the antistatic bracket assembly by reversing the procedures of step (1).

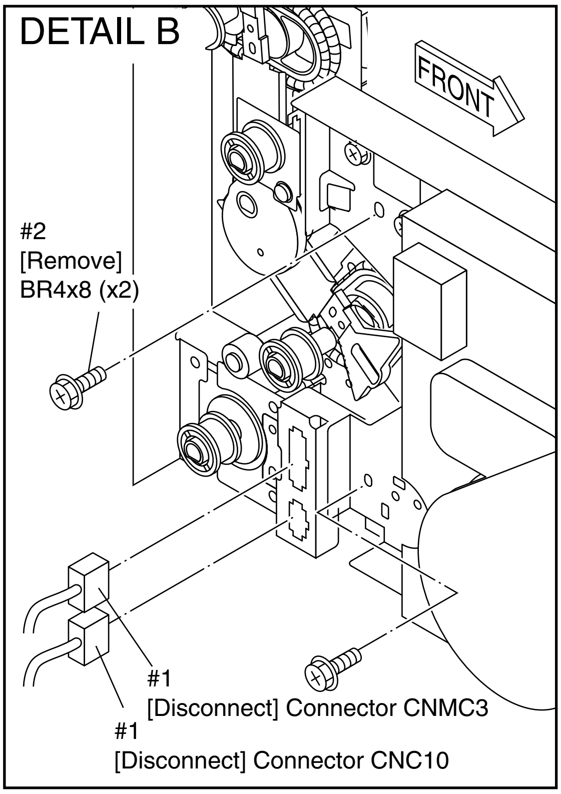
## 9.7 Reinstalling the Erasure Conveyor

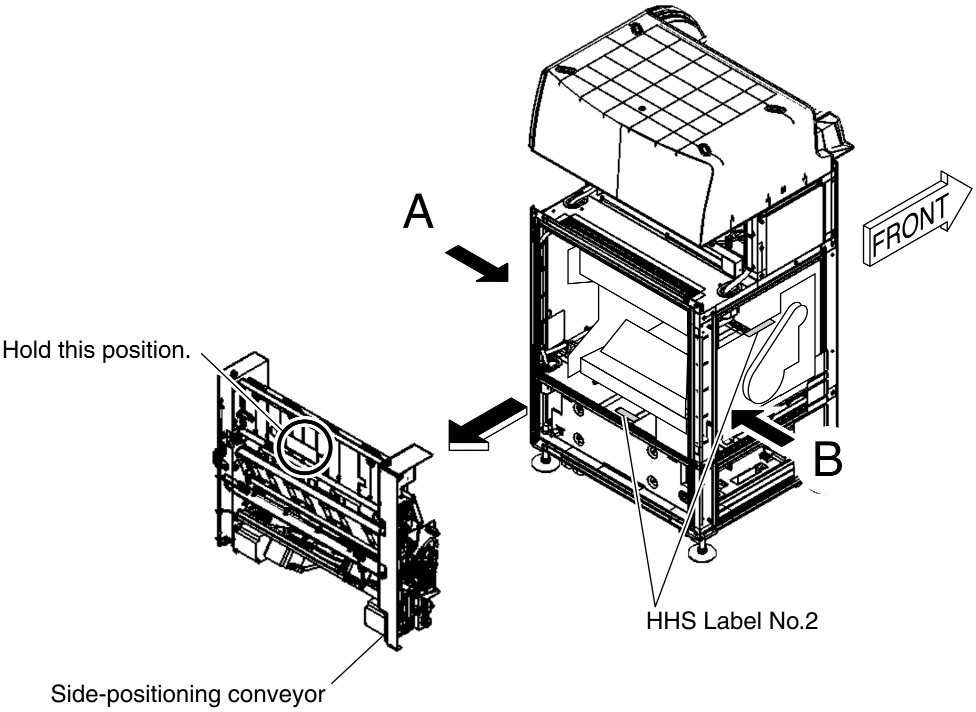
(1) Reverse the procedures described in “9.1 Removing the Erasure Conveyor.”

# 10. Side-Positioning Conveyor

## 10.1 Removing the Side-positioning Conveyor


DETAIL A
#2
[Remove] BR4x8 (x2)
#1
[Disconnect]
Connector CNC1
FRONT


DETAIL B
FRONT
#2
[Remove]
BR4x8 (x2)
#1
[Disconnect] Connector CNMC3
#1
[Disconnect] Connector CNC10

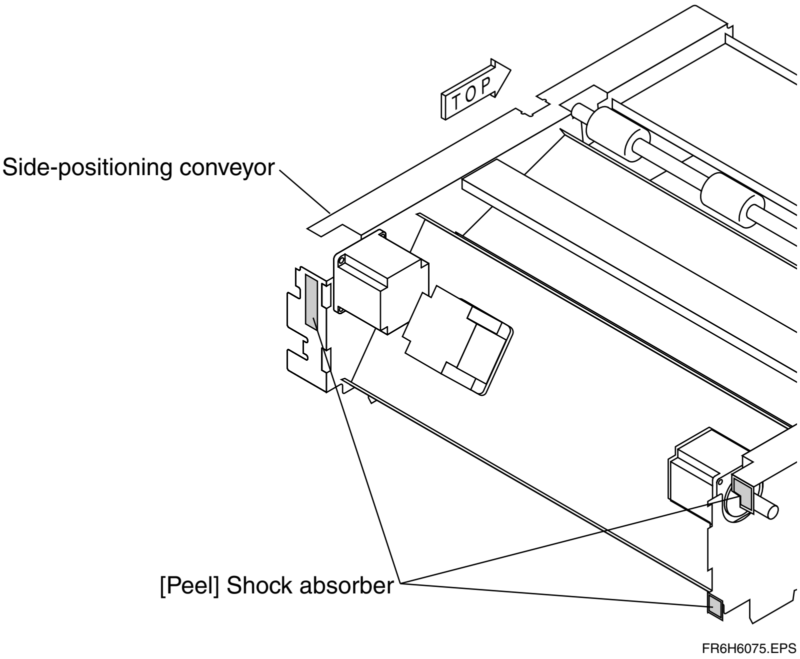

A
FRONT
Hold this position.
B
HHS Label No.2
Side-positioning conveyor

FR6H6037.EPS

## 10.2 Side-Positioning Conveyor (Removing the Shock Absorbers)

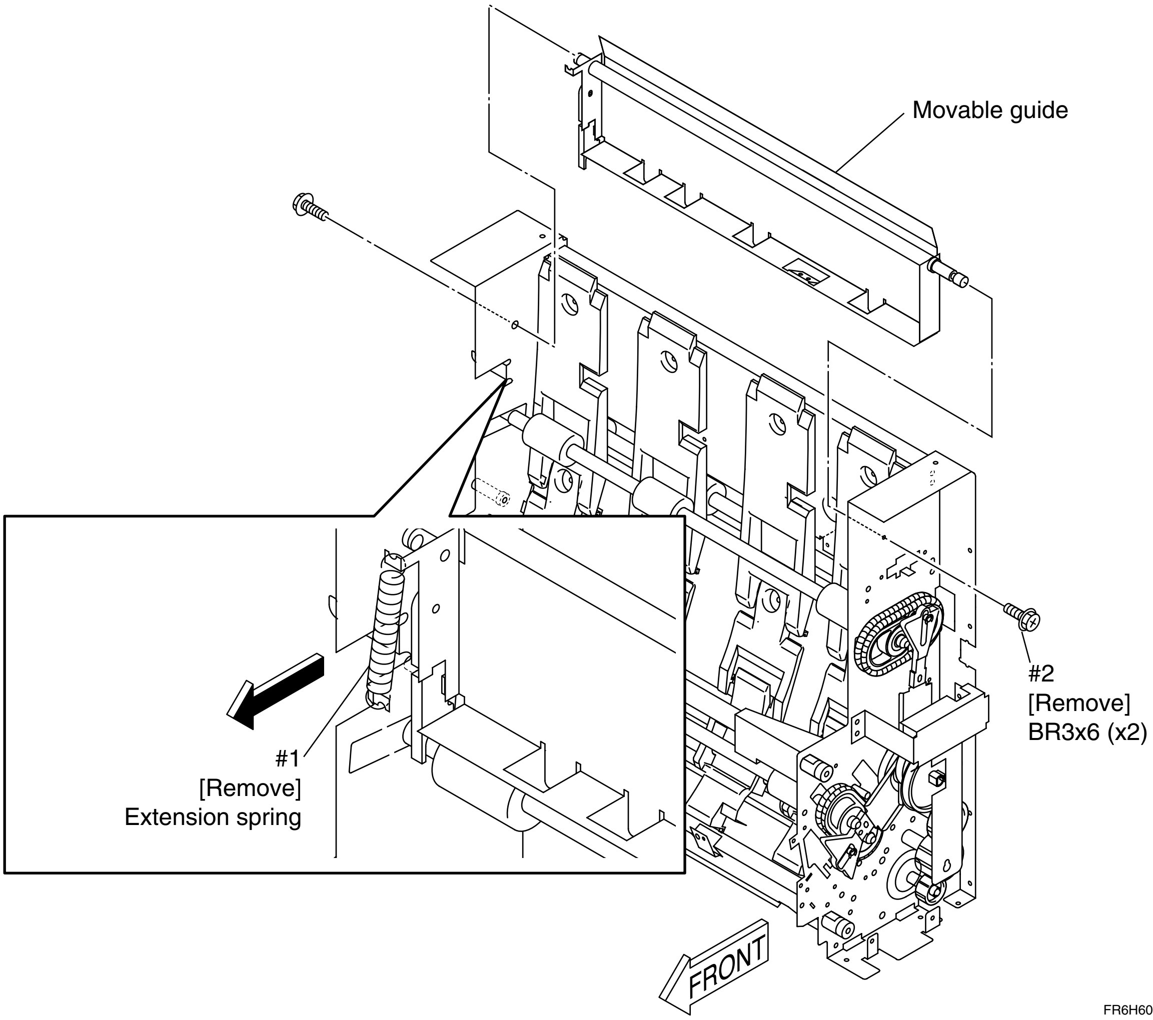
(1) Remove the shock absorbers.

1Y When one year has passed since installation
→ The shock absorbers should be removed.


TOP
Side-positioning conveyor
[Peel] Shock absorber
FR6H6075.EPS

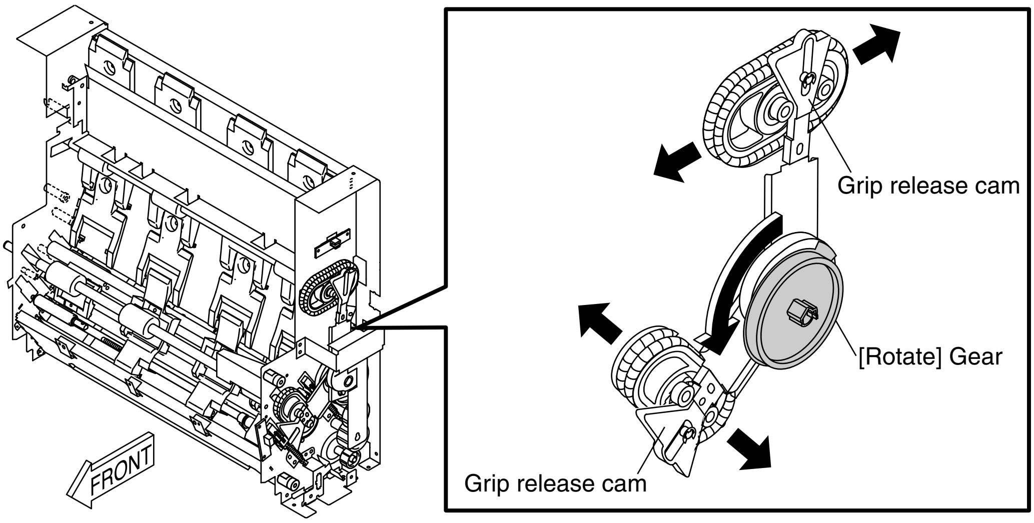
## 10.3 Side-Positioning Conveyor (Cleaning the Guides and Conveyance Rollers)

(1) Remove the movable guide.


Movable guide
#2
[Remove]
BR3x6 (x2)
#1
[Remove]
Extension spring
FRONT

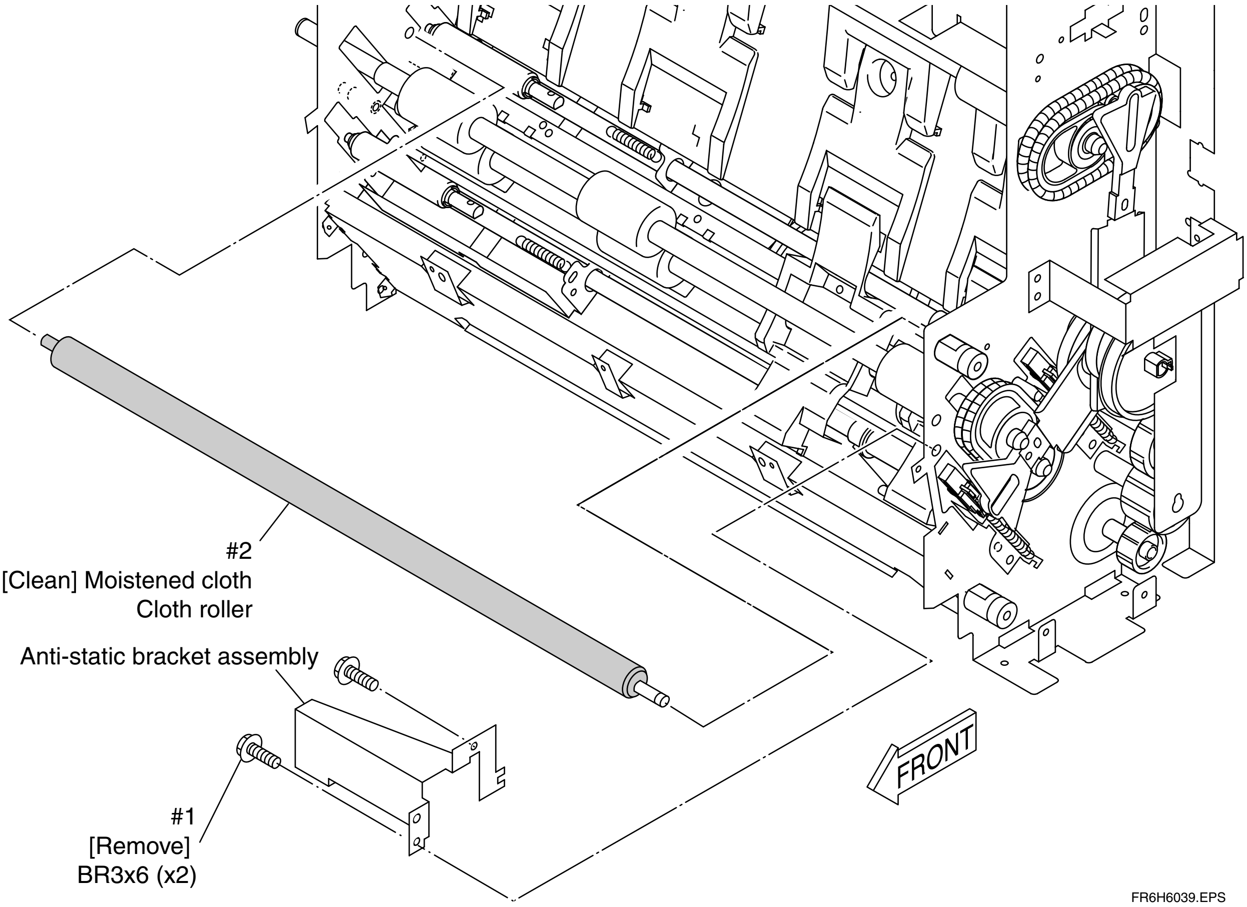
FR6H6040.EPS

(2) Release the grip of the conveyance rollers.


FRONT
Grip release cam
[Rotate] Gear
Grip release cam

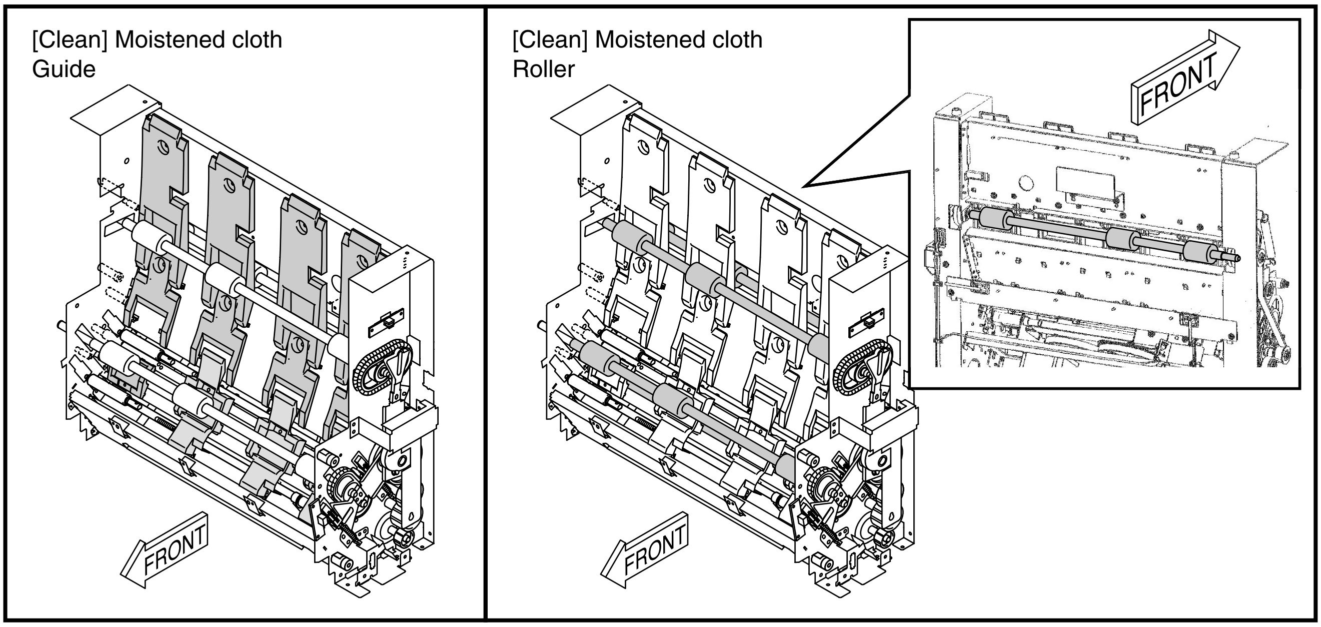
FR6H6041.EPS

(3) Remove the cloth roller.


#2
[Clean] Moistened cloth
Cloth roller
Anti-static bracket assembly
#1
[Remove]
BR3x6 (x2)
FRONT

FR6H6039.EPS

(4) Clean the conveyance rollers and guides with a moistened cloth.


[Clean] Moistened cloth
Guide
FRONT
[Clean] Moistened cloth
Roller
FRONT
FRONT

FR6H6042.EPS

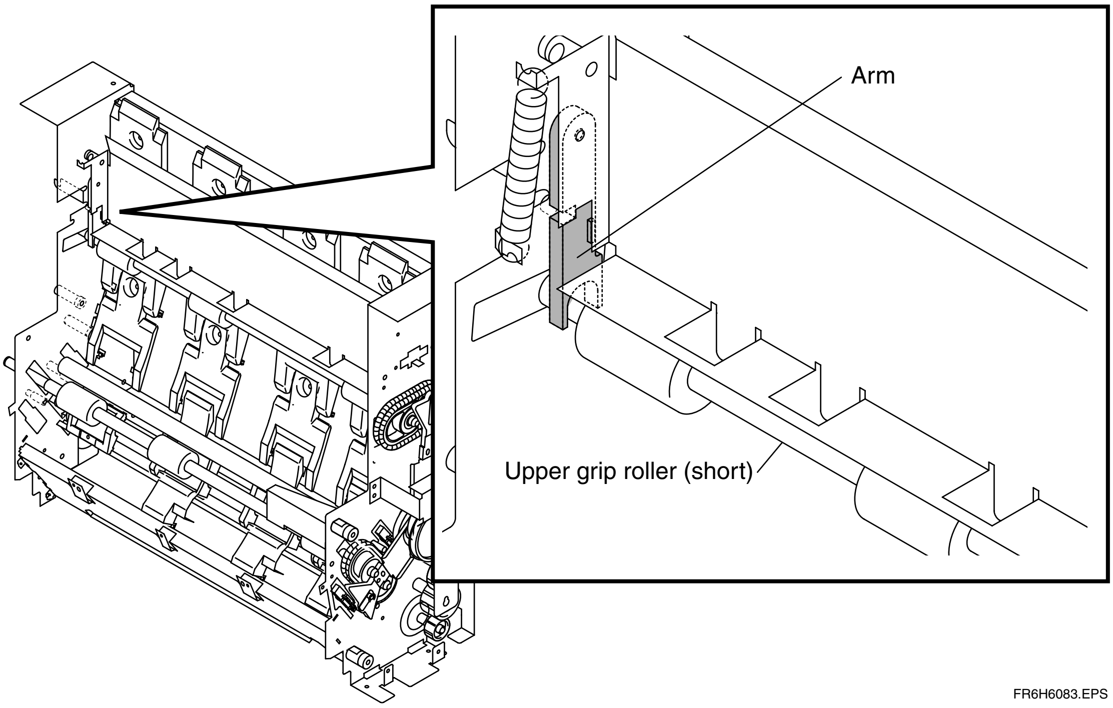
(5) Reinstall the movable guide, antistatic bracket assembly, and cloth roller by reversing their removal procedures.

## 10.4 Reinstalling the Side-Positioning Conveyor

(1) Reverse the procedures for removing the movable guide.

**◆ *NOTE* ◆**

*Make sure that the upper grip roller (short) is fitted in the notch of the arm.*



(2) Reverse the procedures for removing the cloth roller.

**◇ *REFERENCE* ◇**

*The side-positioning conveyor should be reinstalled after the preventive maintenance for the subscanning unit has been completed.*

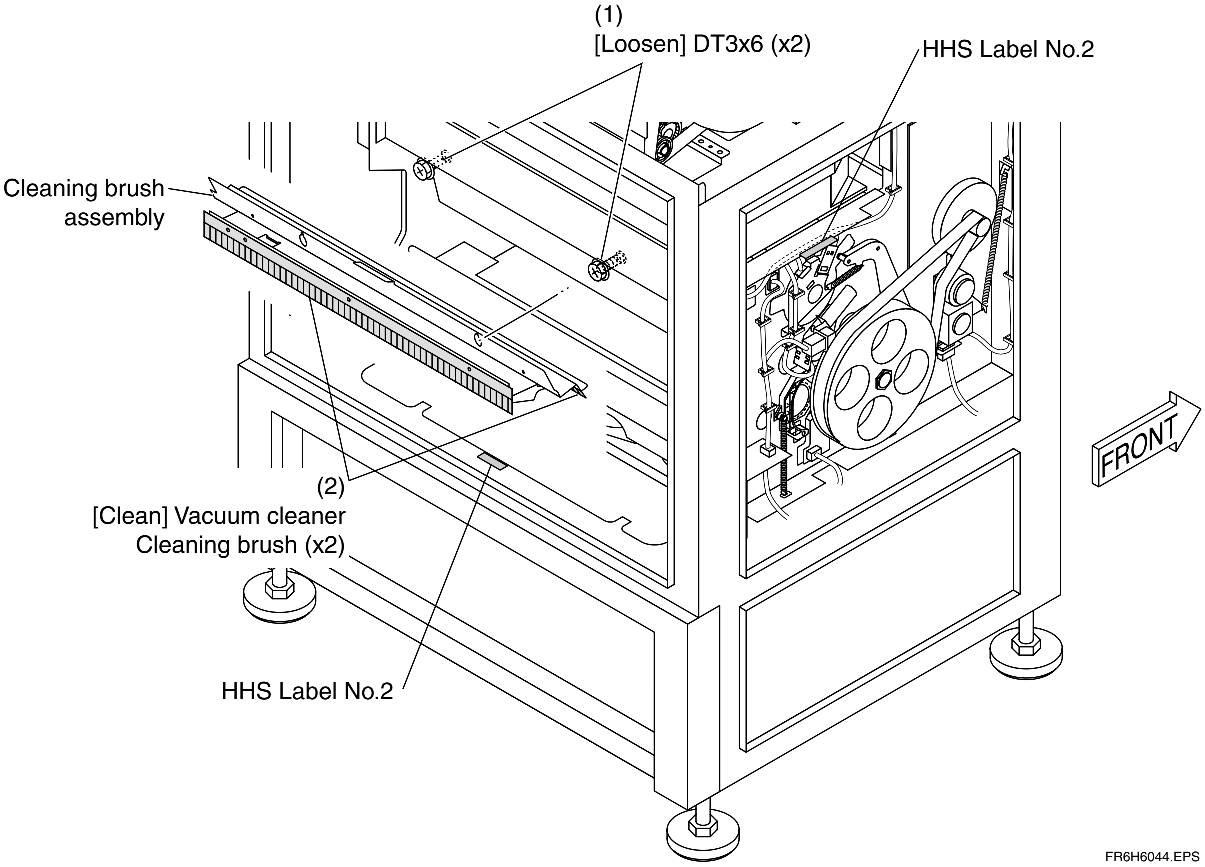
# 11. Subscanning Unit

## 11.1 Subscanning Unit (Cleaning the Cleaning Brushes)

### ■ Procedures on the Driven Shaft Side (Machine Rear Side)

(1) Remove the cleaning brush assembly.

(2) Clean the cleaning brushes.

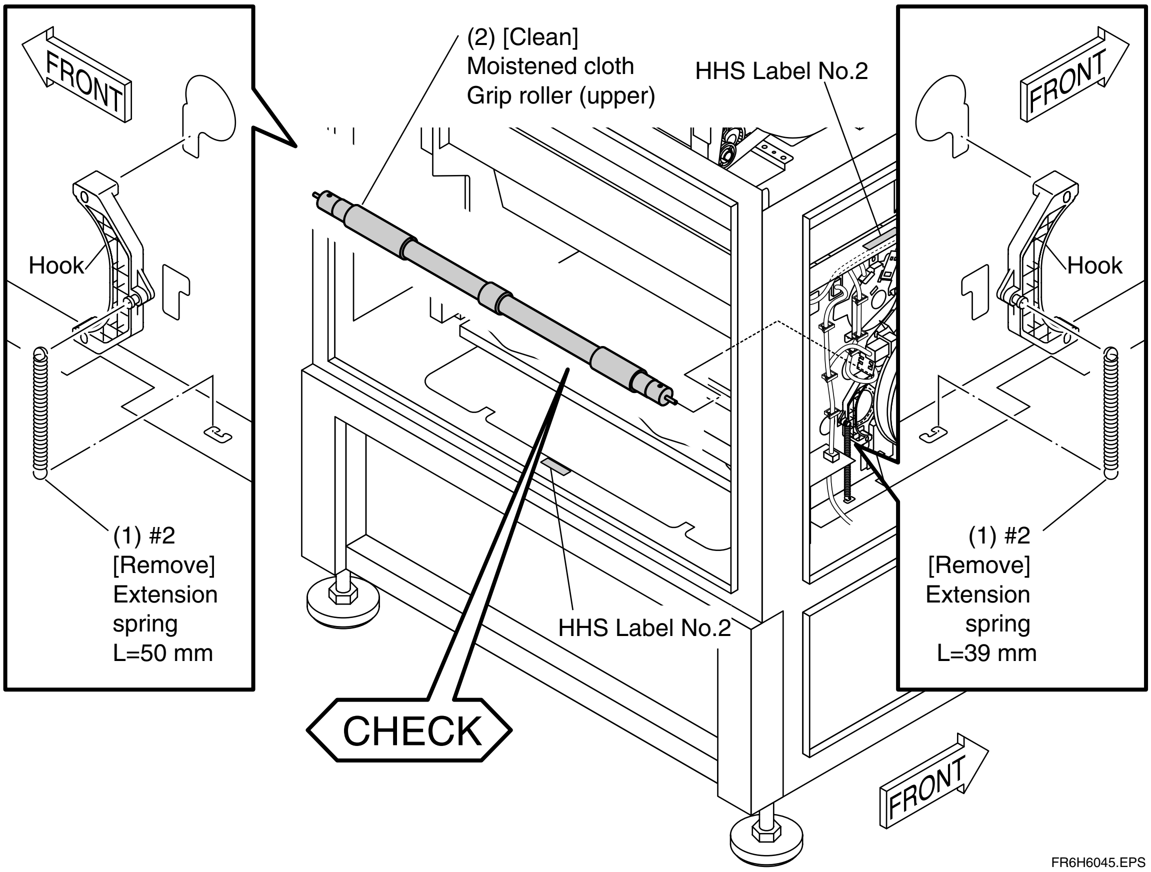

(1)
[Loosen] DT3x6 (x2)
HHS Label No.2
Cleaning brush assembly
(2)
[Clean] Vacuum cleaner
Cleaning brush (x2)
HHS Label No.2
FRONT

FR6H6044.EPS

## 11.2 Subscanning Unit (Cleaning the Driven-Shaft Side Guide/ Roller)

(1) Remove the driven-shaft grip roller (upper).

(2) Clean the driven-shaft grip roller with a moistened cloth.


FRONT
Hook
(1) #2
[Remove]
Extension
spring
L=50 mm
(2) [Clean]
Moistened cloth
Grip roller (upper)
HHS Label No.2
HHS Label No.2
CHECK
FRONT
Hook
(1) #2
[Remove]
Extension
spring
L=39 mm
FRONT
FR6H6045.EPS

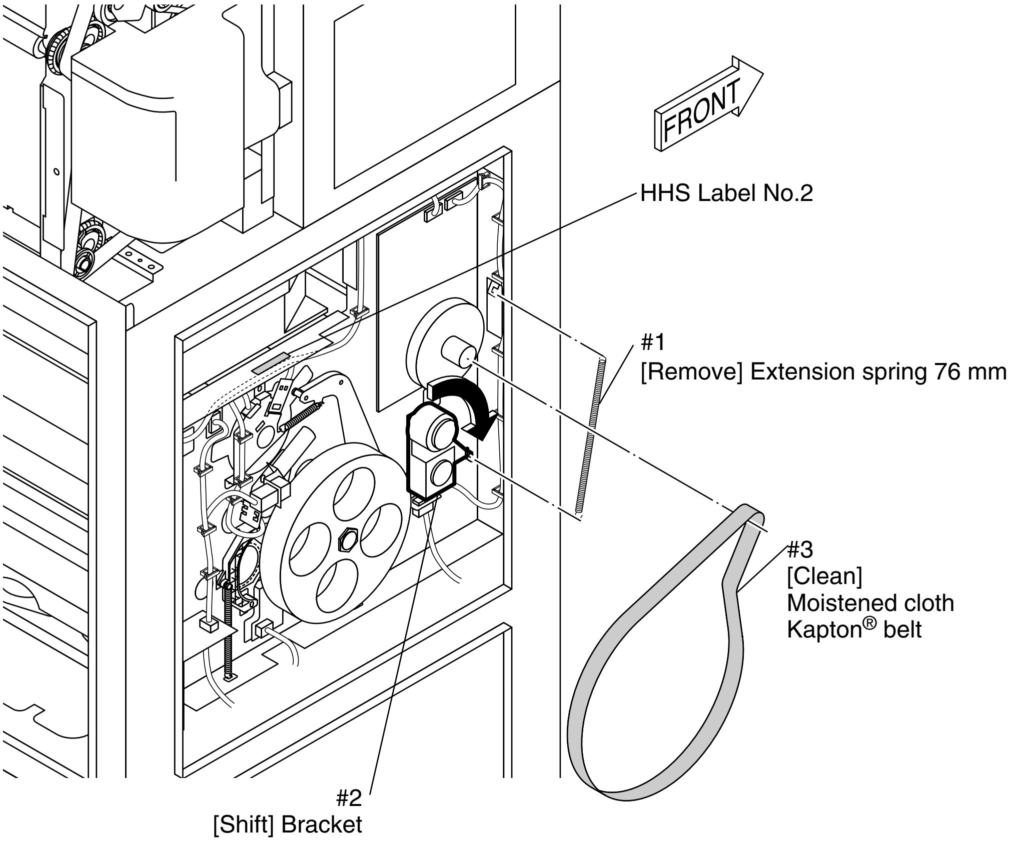
## 11.3 Subscanning Unit (Cleaning the Kapton® Belt)

(1) Remove the Kapton® belt.

**◆ *INSTRUCTION* ◆**

*When cleaning the Kapton® belt, ethanol should not be used. If ethanol is used, the date and other markings on the Kapton® belt will be wiped out.*

(2) Clean the Kapton® belt.


FRONT
HHS Label No.2
#1
[Remove] Extension spring 76 mm
#3
[Clean]
Moistened cloth
Kapton® belt
#2
[Shift] Bracket

FR6H6502.EPS

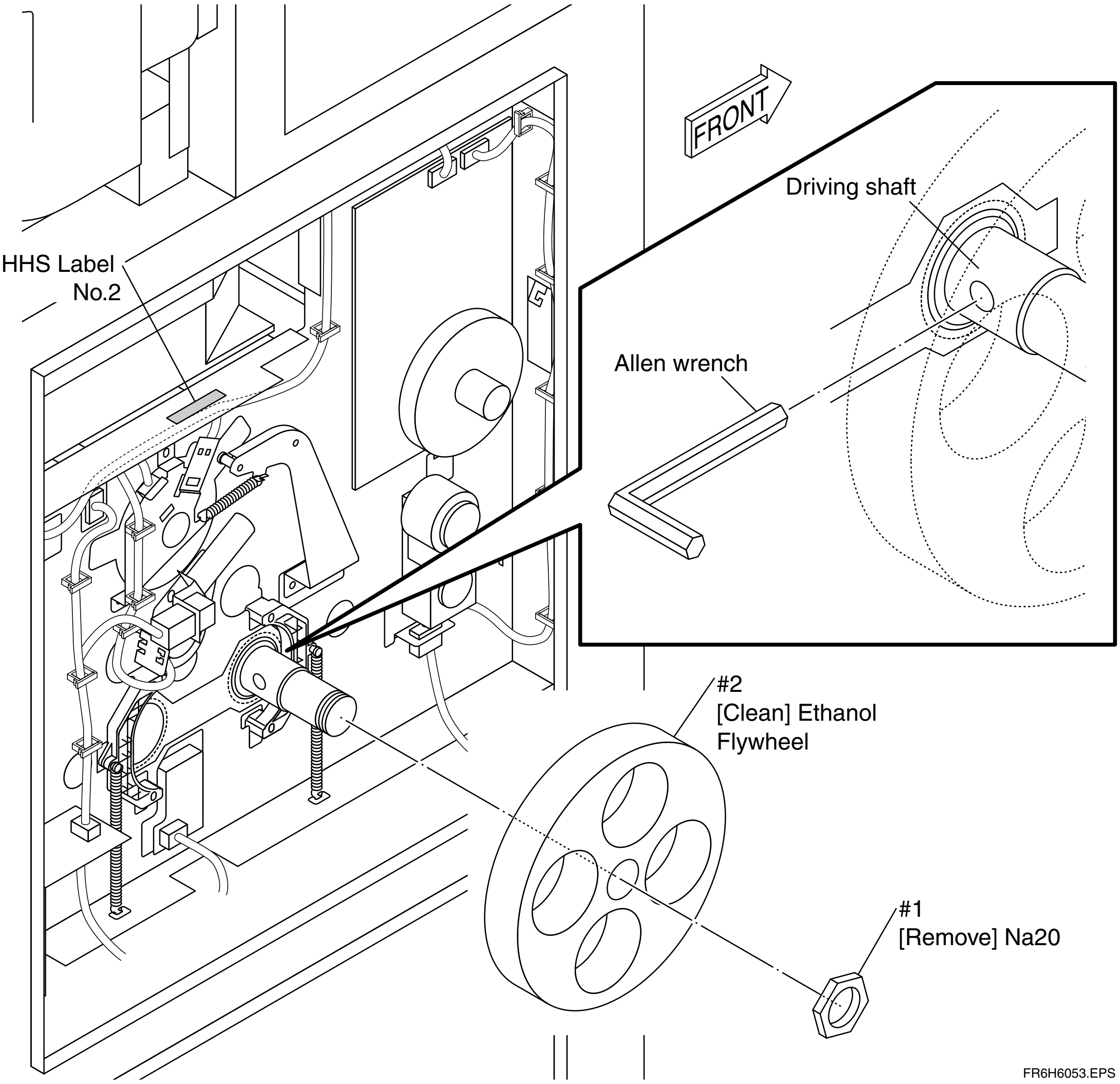
# 11.4 Subscanning Unit (Cleaning the Flywheel/Light-Collecting Mirror/Lower Rollers/Guides)

## ■ Removal Procedures

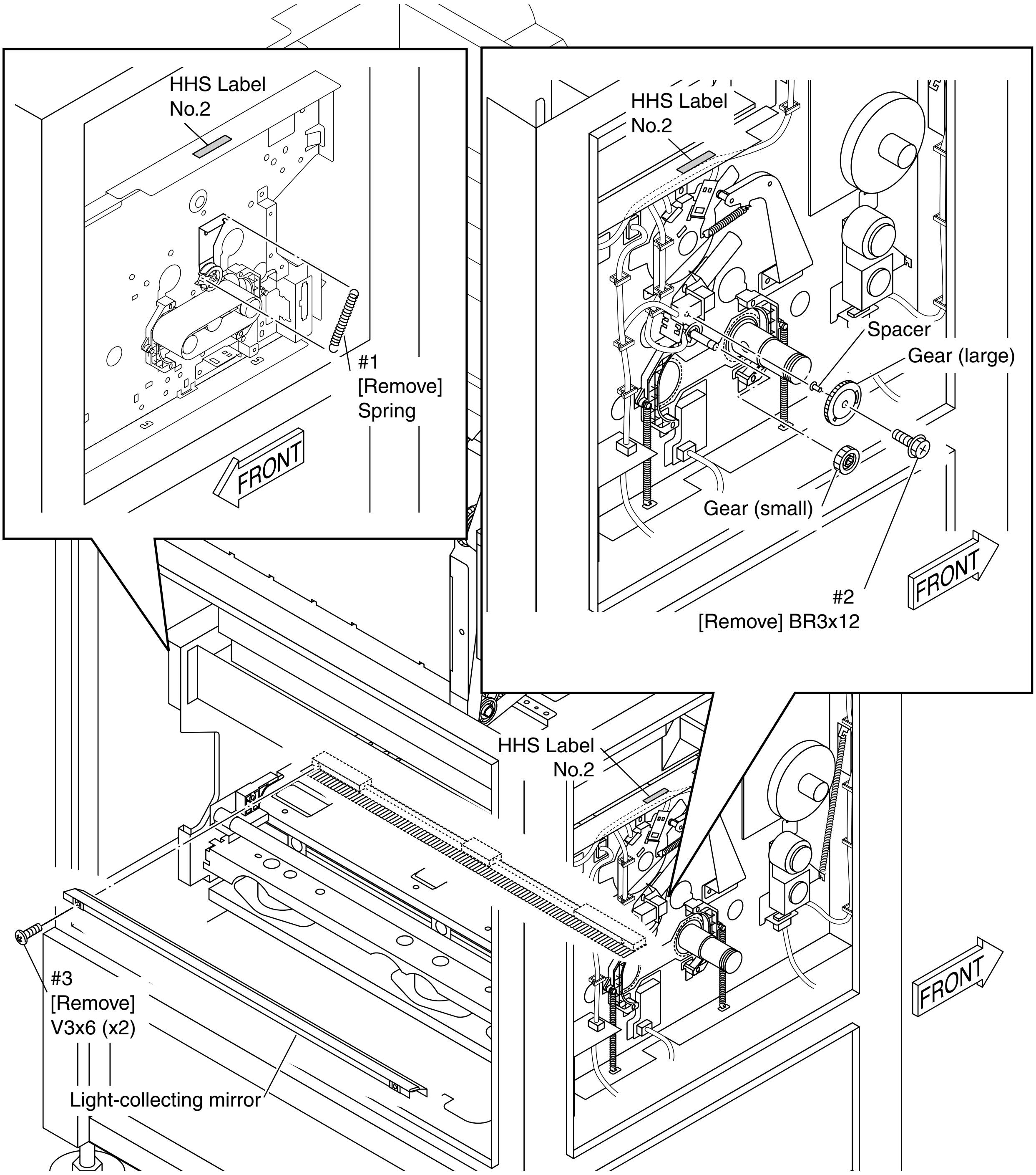
◆ ***INSTRUCTION*** ◆

*Use care not to damage the surface in contact with the Kapton® belt.*

(1) Remove the flywheel.
(2) Clean the flywheel.


FRONT
Driving shaft
HHS Label No.2
Allen wrench
#2
[Clean] Ethanol
Flywheel
#1
[Remove] Na20
FR6H6053.EPS

(2) Remove the spring and gears.

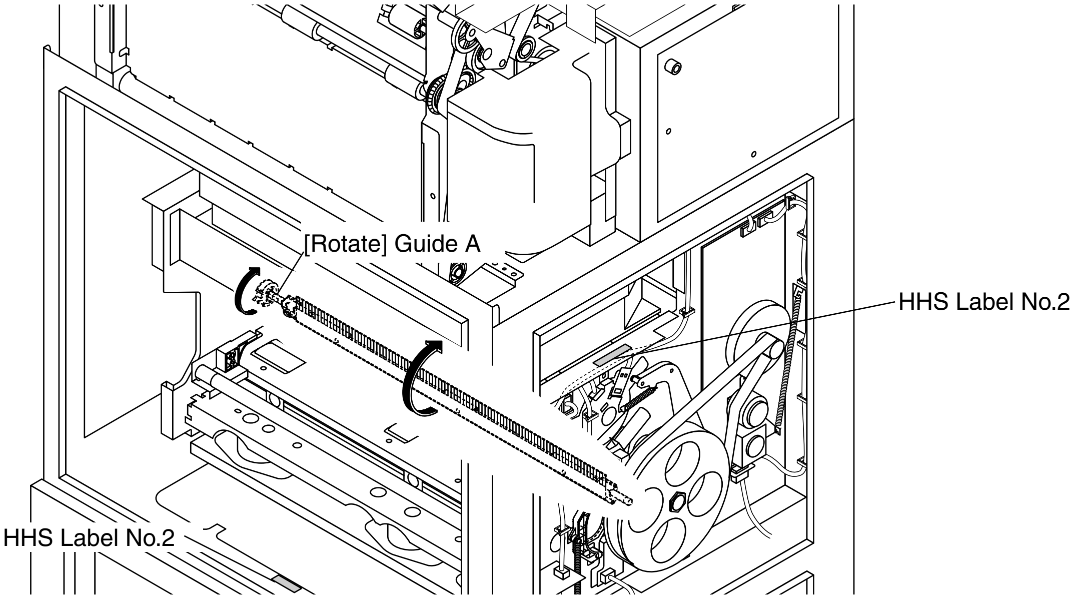

HHS Label
No.2
#1
[Remove]
Spring
FRONT
HHS Label
No.2
Spacer
Gear (large)
Gear (small)
#2
[Remove] BR3x12
FRONT
HHS Label
No.2
FRONT
#3
[Remove]
V3x6 (x2)
Light-collecting mirror

FR6H6058.EPS

(3) Remove the light-collecting mirror.

**◇ REFERENCE ◇**

*When removing the light-collecting mirror, rotate the guide A in the direction of the arrow as shown below to facilitate access to the screw that retains the light-collecting mirror.*

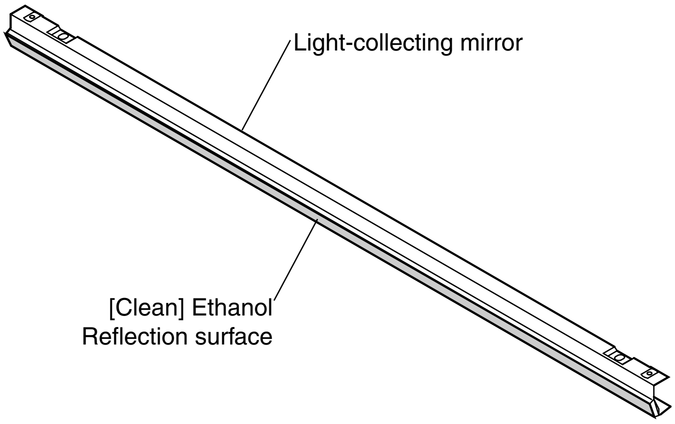

[Rotate] Guide A
HHS Label No.2
HHS Label No.2

FR6H6046.EPS

## CAUTIONS

- *Do not wipe the light-collecting mirror with a dry cloth. If so, the light-collecting mirror may be scratched or otherwise damaged.*
- *If the lens cleaning paper becomes soiled, replace it with a new one.*
- *Wipe the light-collecting mirror until the lens cleaning paper becomes no longer soiled.*

(4) Using the lens cleaning paper moistened with ethanol, clean the reflection surface of the light-collecting mirror.

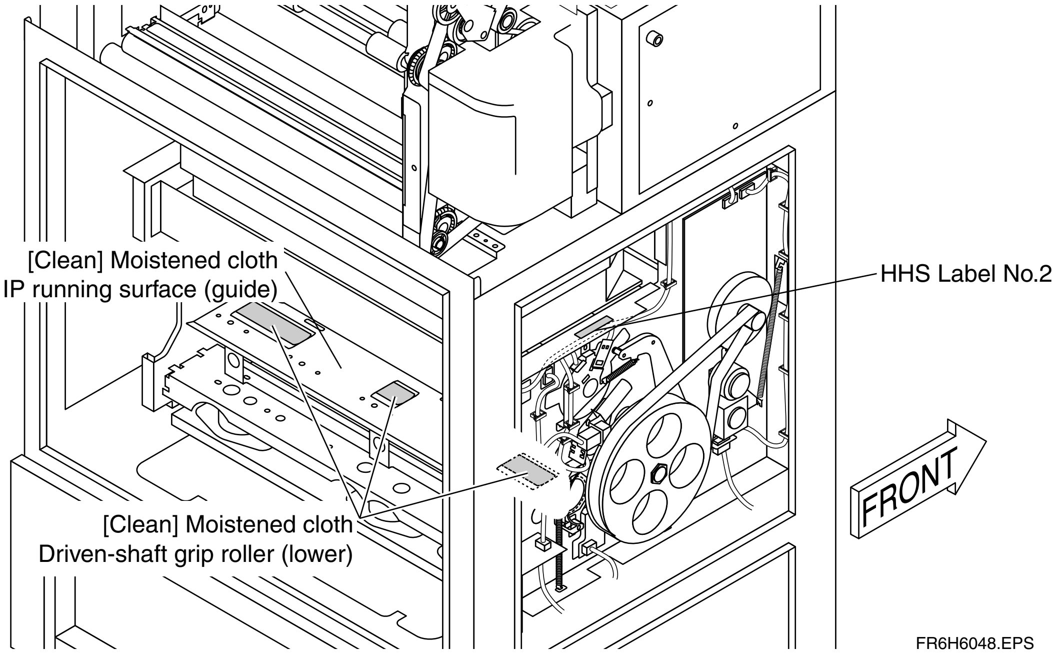

Light-collecting mirror
[Clean] Ethanol
Reflection surface

FR6H6047.EPS

**◇ REFERENCE ◇**

*To clean the light-collecting mirror, two sheets of lens cleaning paper should be folded in four and then moistened with ethanol.*

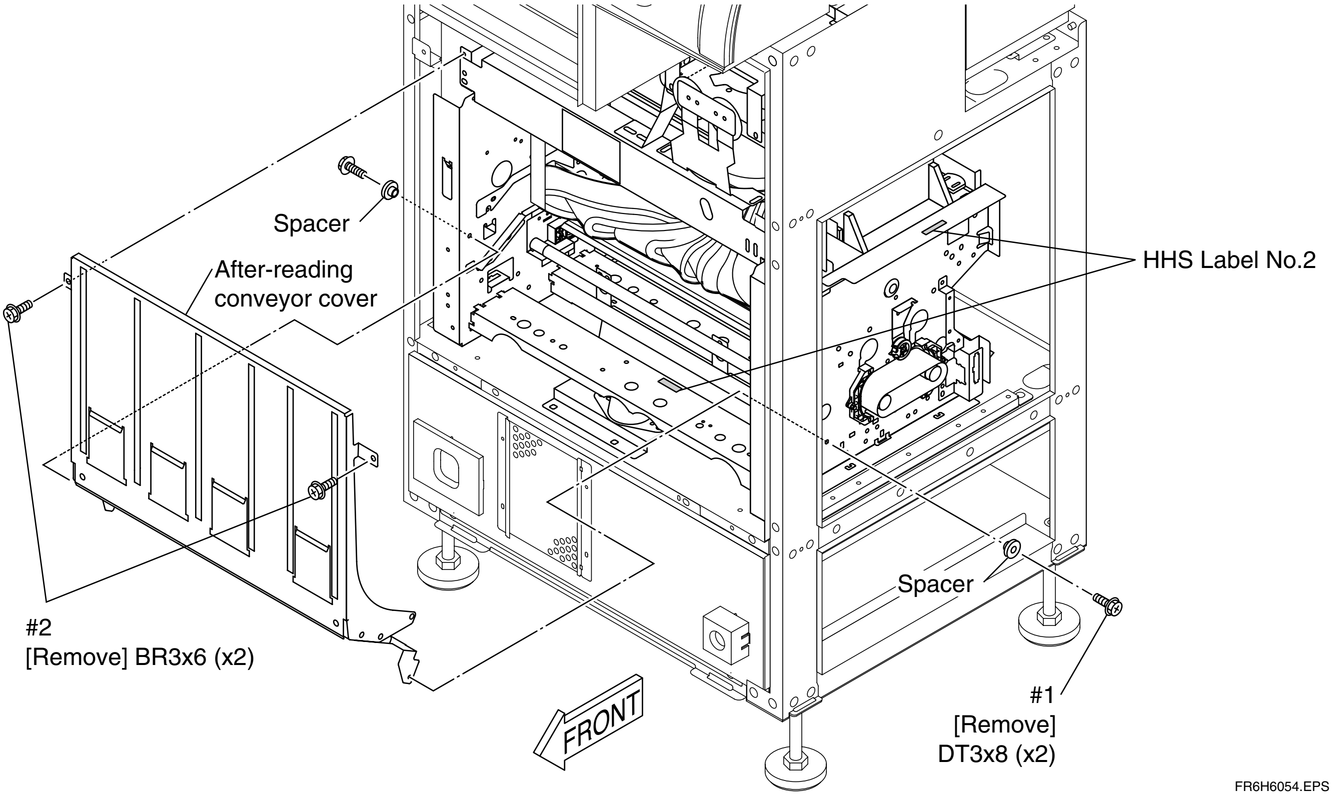
(5) Using a moistened cloth, clean the driven-shaft grip roller (lower) and the IP running surface (guide) on the driven-shaft side.


[Clean] Moistened cloth
IP running surface (guide)
HHS Label No.2
FRONT
[Clean] Moistened cloth
Driven-shaft grip roller (lower)
FR6H6048.EPS

# 11.5 Subscanning Unit (Cleaning the Light-Collecting Guide)

## ■ Removal Procedures

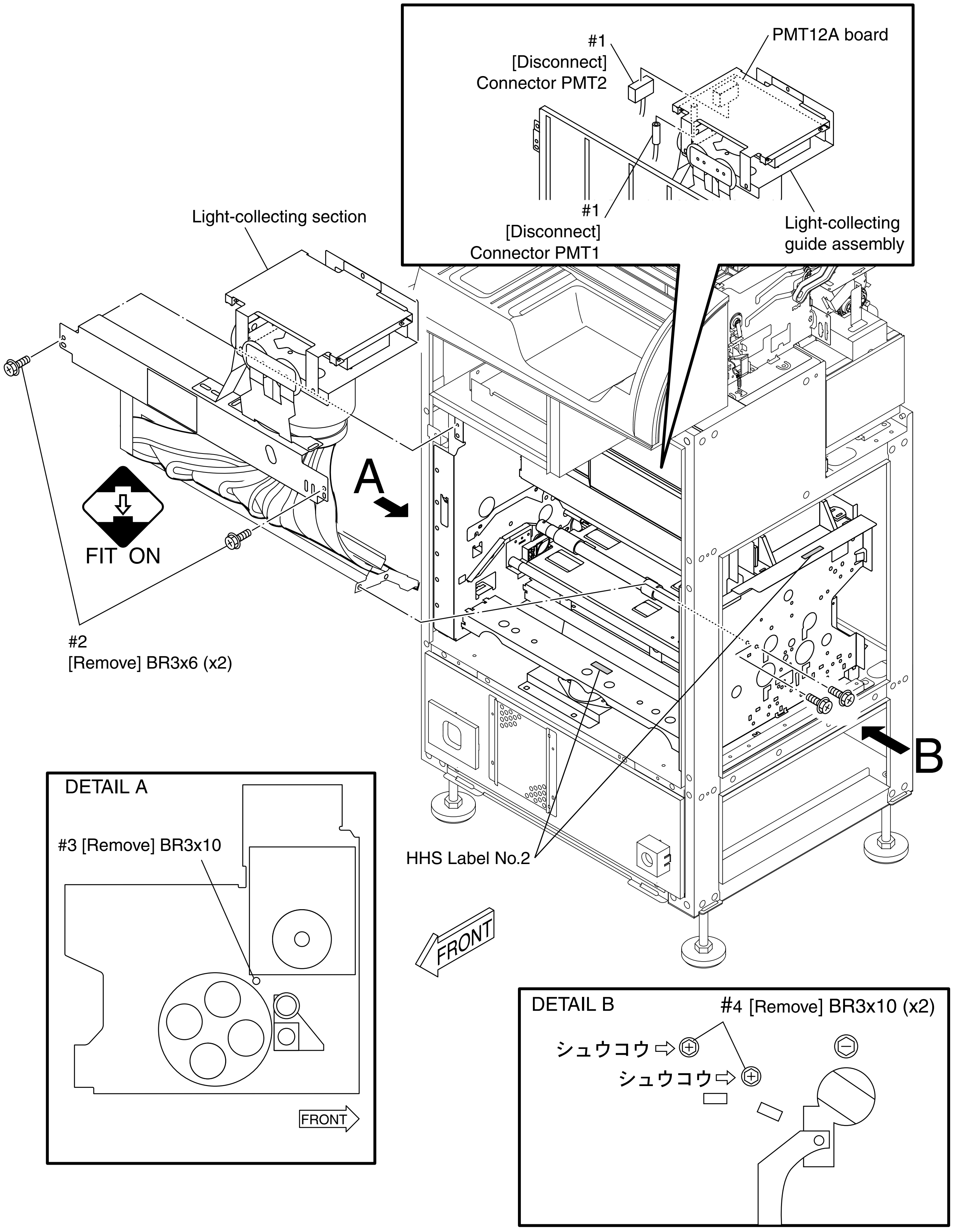
(1) Remove the after-reading conveyor cover.


Spacer
After-reading conveyor cover
HHS Label No.2
#2
[Remove] BR3x6 (x2)
Spacer
FRONT
#1
[Remove]
DT3x8 (x2)
FR6H6054.EPS

**◆ INSTRUCTION ◆**

*The light-collecting guide should be removed along the rails.*

(2) Remove the light-collecting guide.


#1
[Disconnect]
Connector PMT2
PMT12A board
#1
[Disconnect]
Connector PMT1
Light-collecting
guide assembly
Light-collecting section
A
FIT ON
#2
[Remove] BR3x6 (x2)
B
DETAIL A
#3 [Remove] BR3x10
FRONT
HHS Label No.2
FRONT
DETAIL B
#4 [Remove] BR3x10 (x2)
シュウコウ⇨
シュウコウ⇨

FR6H6086.EPS

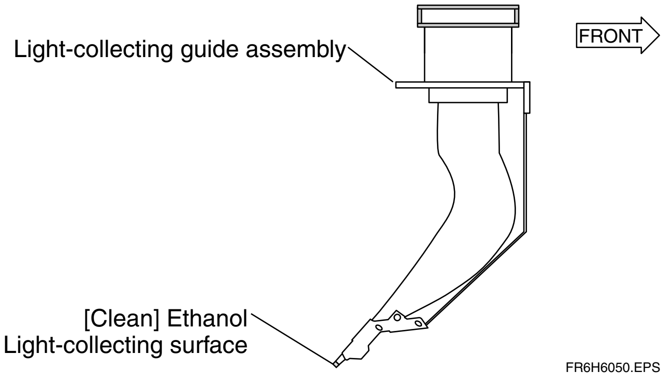
## CAUTIONS

- *Do not wipe the light-collecting guide with a dry cloth. If so, the light-collecting guide may be scratched or otherwise damaged.*
- *If the lens cleaning paper becomes soiled, replace it with a new one.*
- *Wipe the light-collecting surface of the light-collecting guide until the lens cleaning paper becomes no longer soiled.*

## ◇ REFERENCE ◇

*To clean the light-collecting guide, two sheets of lens cleaning paper should be folded in four and then moistened with ethanol.*

(3) Clean the light-collecting surface of the light-collecting guide.


Light-collecting guide assembly
FRONT
[Clean] Ethanol
Light-collecting surface

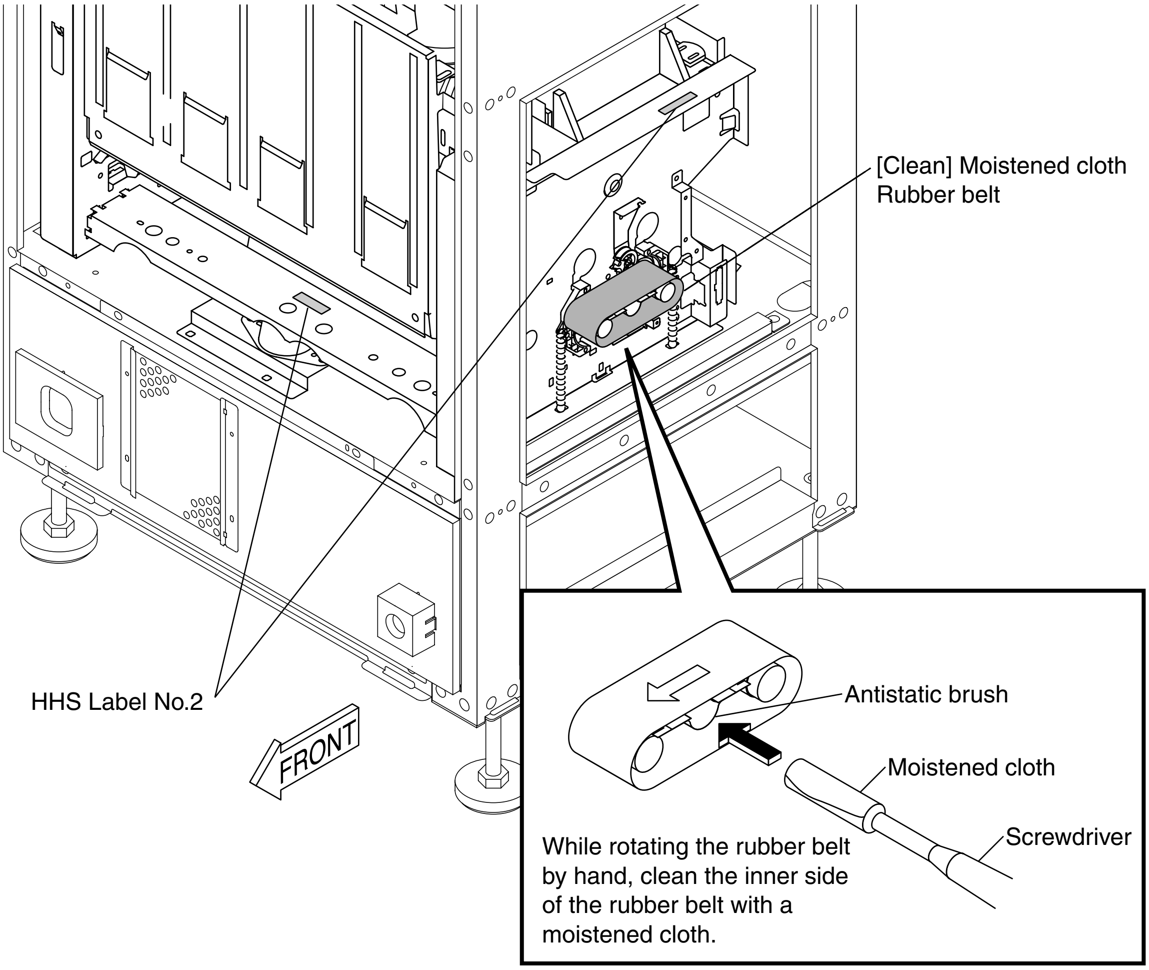
FR6H6050.EPS

## 11.6 Subscanning Unit (Cleaning the Rubber Belt)

**CAUTION**

*The rubber belt should not be removed.*

(1) Clean the rubber belt.


[Clean] Moistened cloth
Rubber belt
HHS Label No.2
FRONT
Antistatic brush
Moistened cloth
Screwdriver

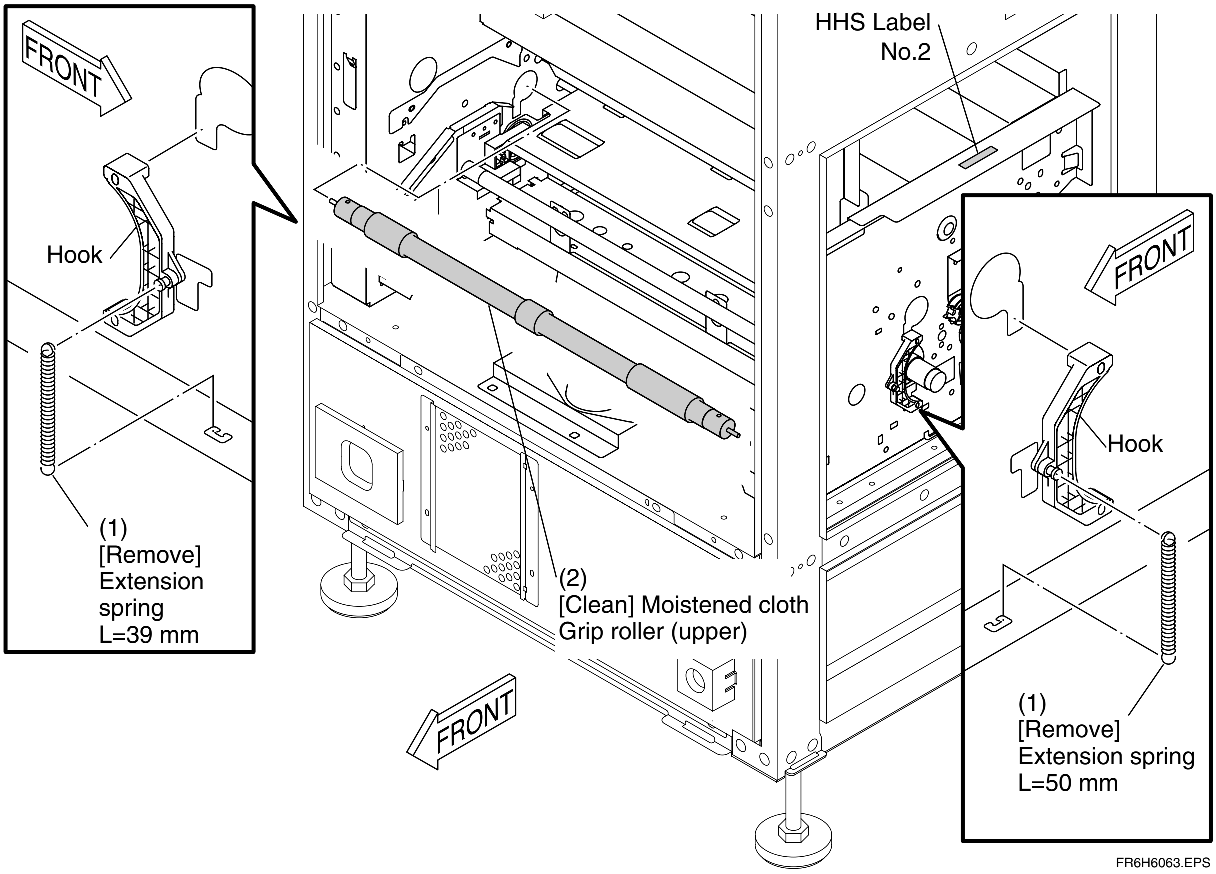
While rotating the rubber belt by hand, clean the inner side of the rubber belt with a moistened cloth.

FR6H6061.EPS

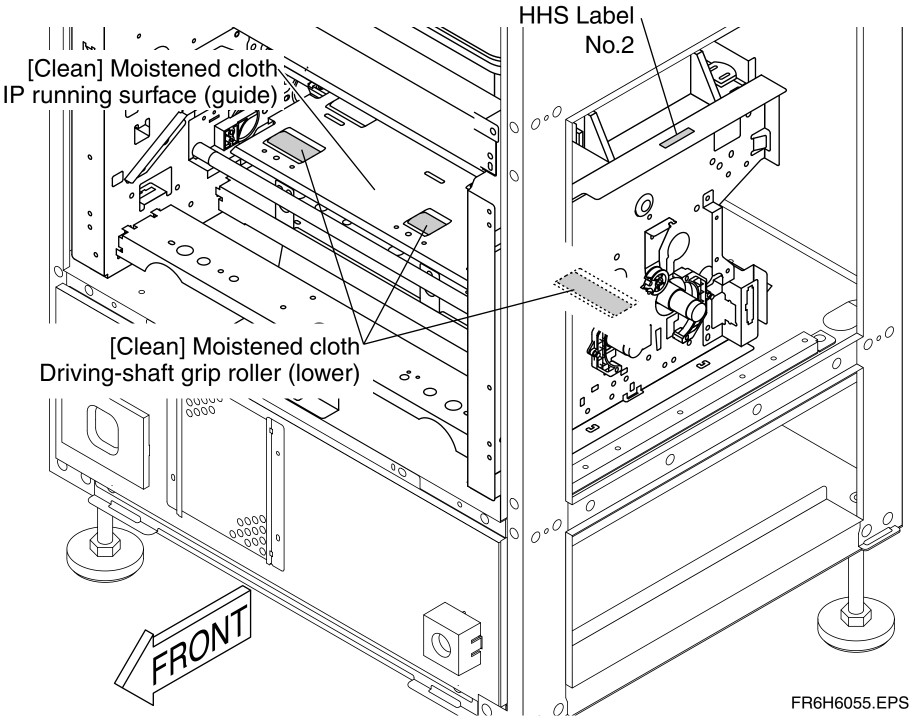
# 11.7 Subscanning Unit (Cleaning the Driving-Shaft Side Guide/ Rollers)

(1) Remove the driving-shaft grip roller (upper).

(2) Clean the driving-shaft grip roller (upper) with a moistened cloth.


FRONT
Hook
(1)
[Remove]
Extension
spring
L=39 mm
HHS Label
No.2
(2)
[Clean] Moistened cloth
Grip roller (upper)
FRONT
FRONT
Hook
(1)
[Remove]
Extension spring
L=50 mm
FR6H6063.EPS

(3) Using a moistened cloth, clean the driving-shaft grip roller (lower) and the IP running surface (guide) on the driving-shaft side.


HHS Label
No.2
[Clean] Moistened cloth
IP running surface (guide)
[Clean] Moistened cloth
Driving-shaft grip roller (lower)
FRONT
FR6H6055.EPS

## 11.8 Reinstalling the Subscanning Unit

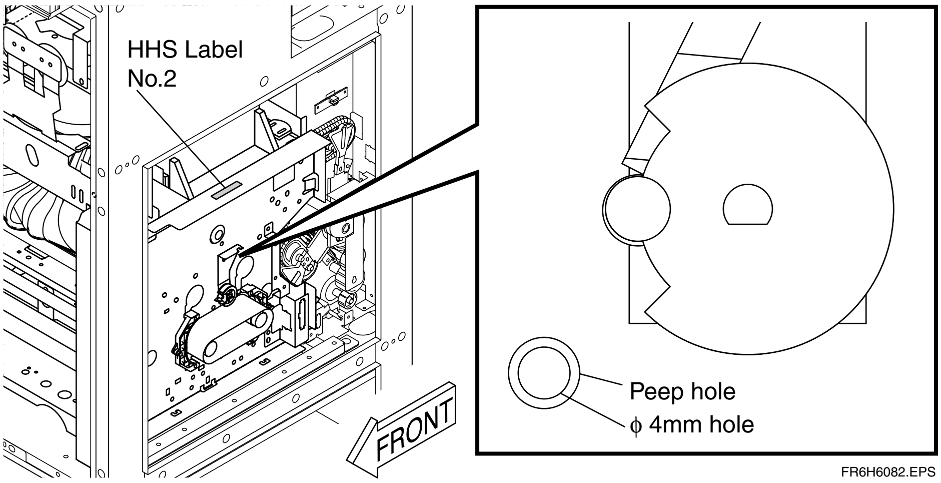
(1) Reinstall the driving-shaft grip roller (upper).

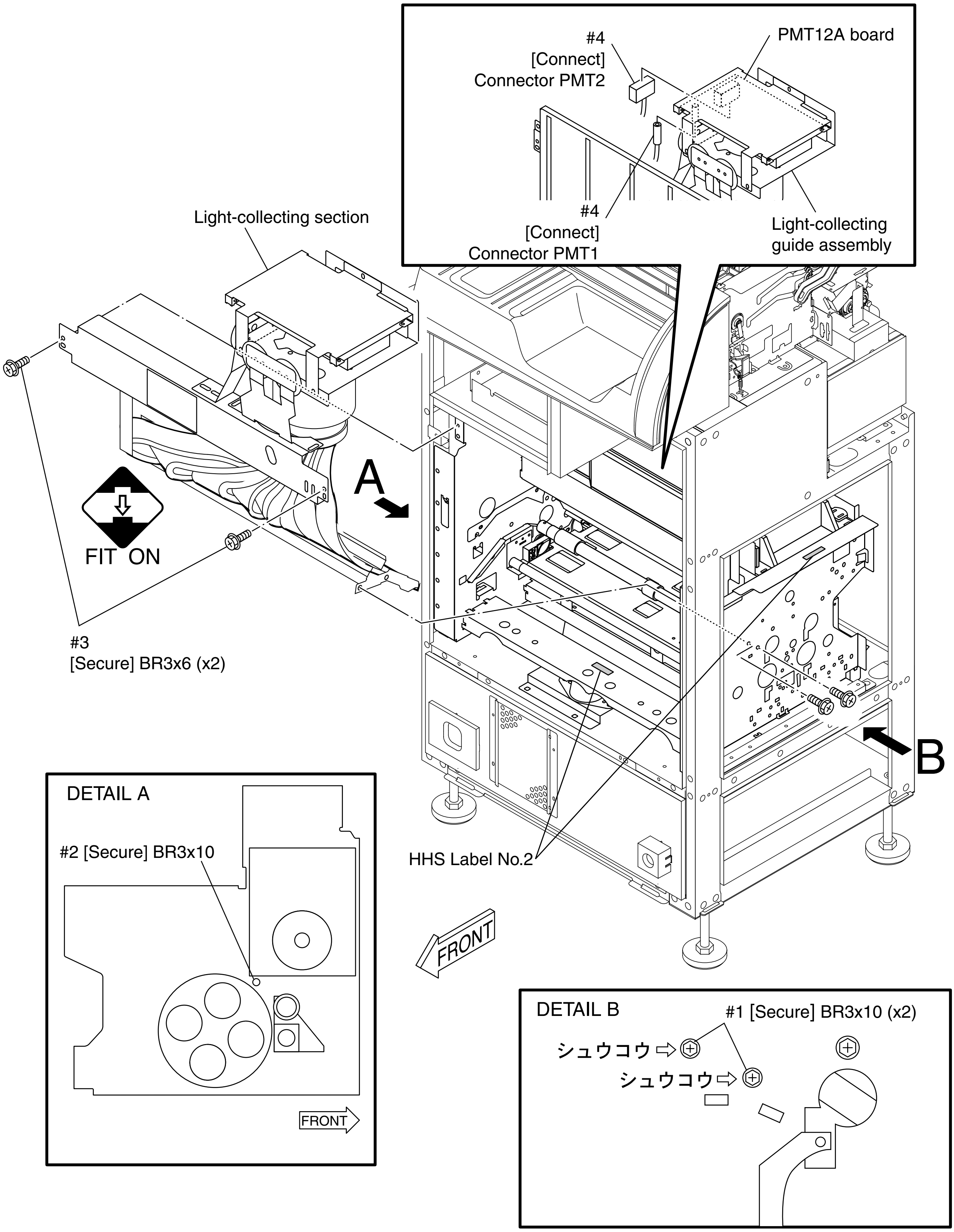
☞ “11.7 Subscanning Unit (Cleaning the Driving-Shaft Side Guide/Rollers)

(2) Reinstall the light-collecting guide.

**◆ *NOTE* ◆**

*While looking into the peep hole, verify that the ϕ4 mm hole is visible.*


HHS Label
No.2
FRONT
Peep hole
ϕ 4mm hole
FR6H6082.EPS


#4
[Connect]
Connector PMT2
PMT12A board
#4
[Connect]
Connector PMT1
Light-collecting
guide assembly
Light-collecting section
A
FIT ON
#3
[Secure] BR3x6 (x2)
B
HHS Label No.2
FRONT
DETAIL A
#2 [Secure] BR3x10
FRONT
DETAIL B
#1 [Secure] BR3x10 (x2)
シュウコウ ⇨
シュウコウ ⇨

FR6H6049.EPS

(3) Reinstall the after-reading conveyor cover.

☞ “11.5 Subscanning Unit (Cleaning the Light-Collecting Guide), ■ Removal Procedures”

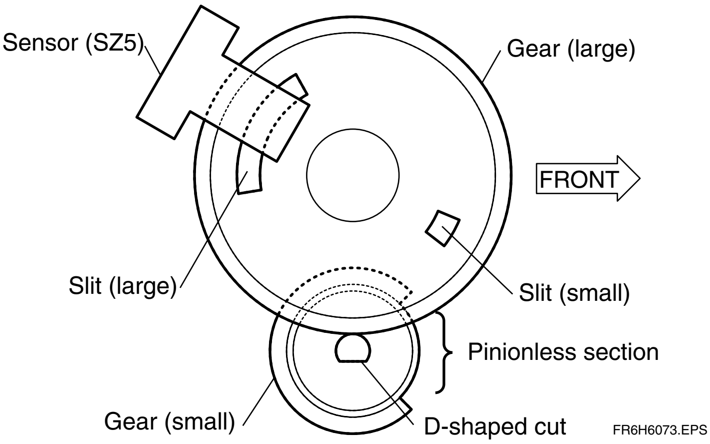
(4) Reinstall the light-collecting mirror.

☞ “(3) of 11.4 Subscanning Unit (Cleaning the Flywheel/Light-Collecting Mirror/ Lower Rollers/Guides)”

(5) Reinstall the spring and gears.

**◆ *INSTRUCTION* ◆**

*The gear (large) and gear (small) should be mounted in place as illustrated below.*


Sensor (SZ5)
Gear (large)
FRONT
Slit (large)
Slit (small)
Pinionless section
Gear (small)
D-shaped cut
FR6H6073.EPS

---

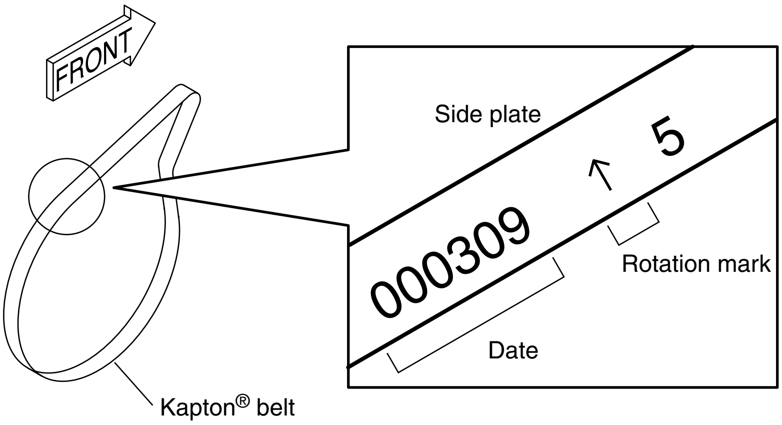
(6) Reverse the procedures for removing the driven shaft grip roller (upper).

(7) Reverse the procedures for removing the cleaning brush.

(8) Reverse the procedures for removing the flywheel.

**◆ *INSTRUCTIONS* ◆**

- *The Kapton® belt should be mounted with its date indicating side up, so that the arrow mark faces the side plate.*
- *After mounting the Kapton® belt, manually rotate the flywheel to verify that the Kapton belt does not come off.*



FR6H6062.EPS

(9) Reverse the procedures for removing the Kapton® belt.

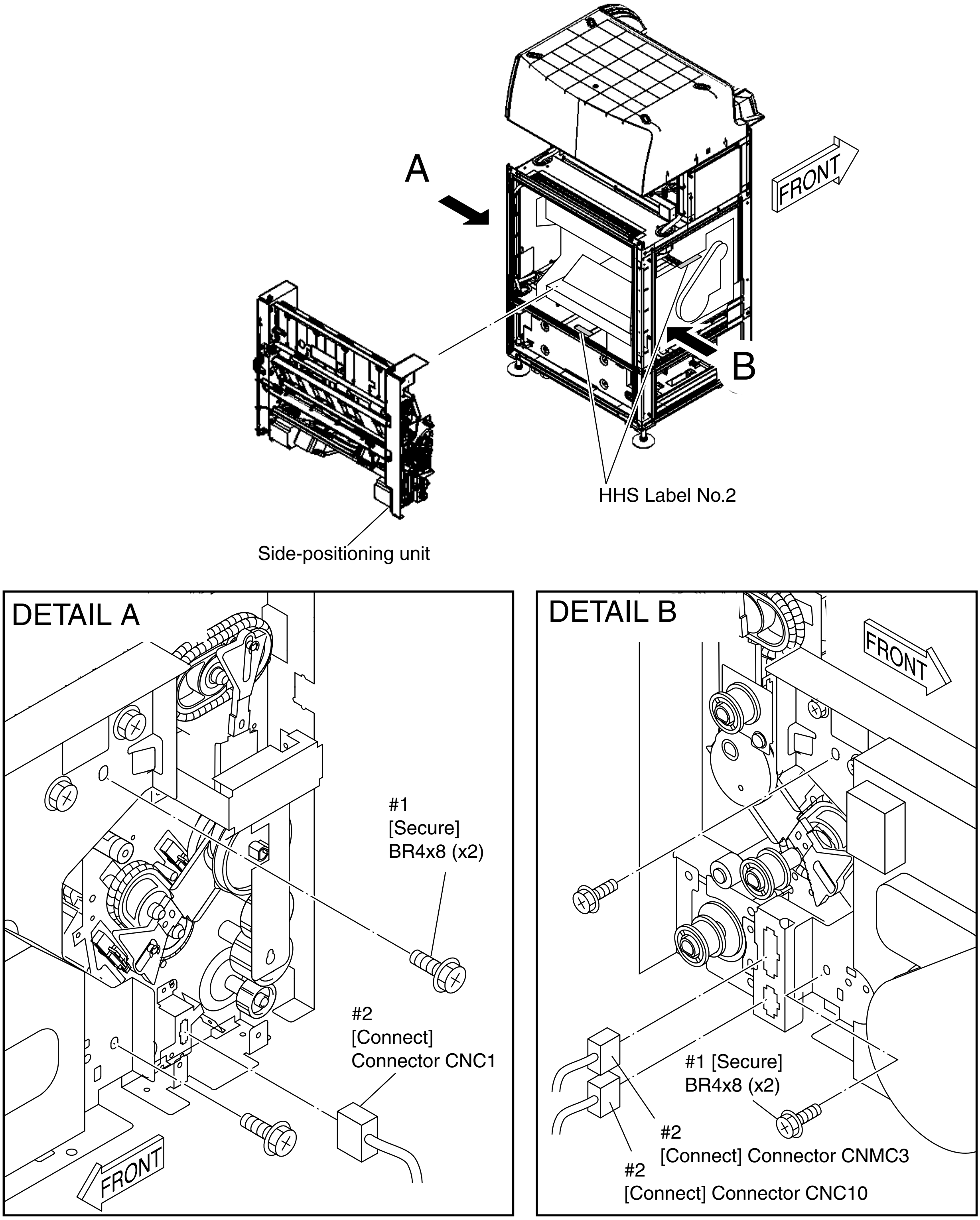
(10) Reinstall the driven-shaft grip roller (upper).

☞ "11.2 Subscanning Unit (Cleaning the Driven-Shaft Side Guide/Roller)

(11) Reinstall the cleaning brushes.

☞ "11.1 Subscanning Unit (Cleaning the Cleaning Brushes)"

(12) Reinstall the side-positioning conveyor in reverse order of removal.

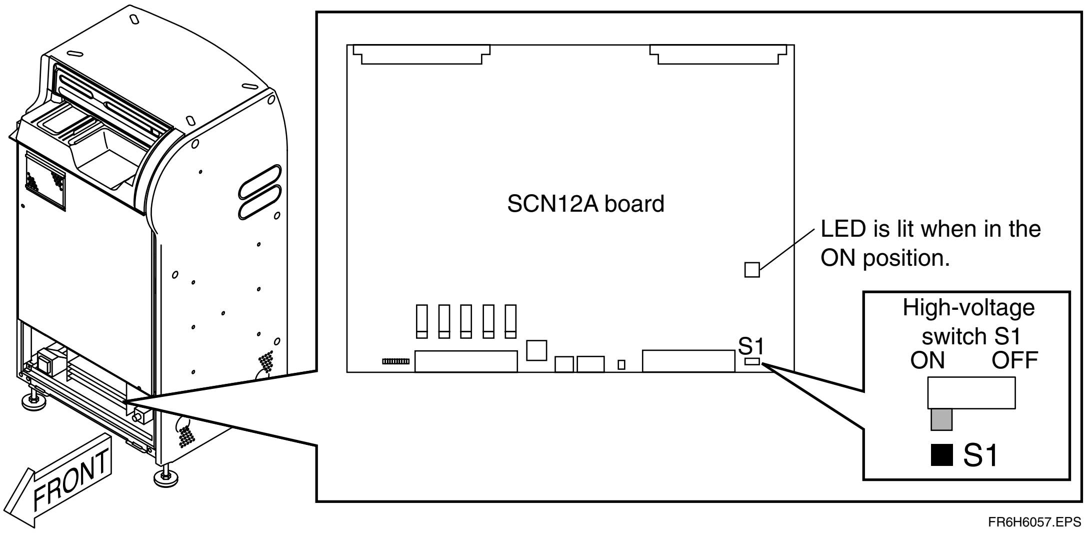

A
FRONT
B
HHS Label No.2
Side-positioning unit
DETAIL A
#1
[Secure]
BR4x8 (x2)
#2
[Connect]
Connector CNC1
FRONT
DETAIL B
FRONT
#1 [Secure]
BR4x8 (x2)
#2
[Connect] Connector CNMC3
#2
[Connect] Connector CNC10
FR6H6056.EPS

# 12. Cleaning Inside the Machine

(1) Using a vacuum cleaner, remove dust deposited inside the machine.

# 13. Turning ON the High-Voltage Switch

(1) Turn ON the high-voltage switch.


FRONT
SCN12A board
LED is lit when in the ON position.
S1
High-voltage switch S1
ON
OFF
■ S1
FR6H6057.EPS

# 14. Reinstalling and Cleaning the Covers

⚠ **CAUTION**

*Before reinstalling the covers, make sure that the high-voltage switch of the SCN12A board is in the ON position.*

(1) Reinstall the covers by reversing their removal procedures.

☞ “5. Removing the Covers”

(2) Clean the covers.

# 15. Securing the Machine

## 15.1 Connecting the Cables.

(1) Connect the cables by reversing their disconnection procedures.

☞ “4.2 Disconnecting the Cables”

## 15.2 Securing the Machine

(1) Secure the machine by reversing the procedures for unlocking the retainers.

☞ “4.1 Unlocking the Retainers”

# 16. Checking the Image/Conveyance

☞ “3. Checking the Image/Conveyance”

# 17. Checking the Error Log

☞ “2.2 Checking the Error Log”

# 18. Resetting the Erasure Lamp Lighting Time

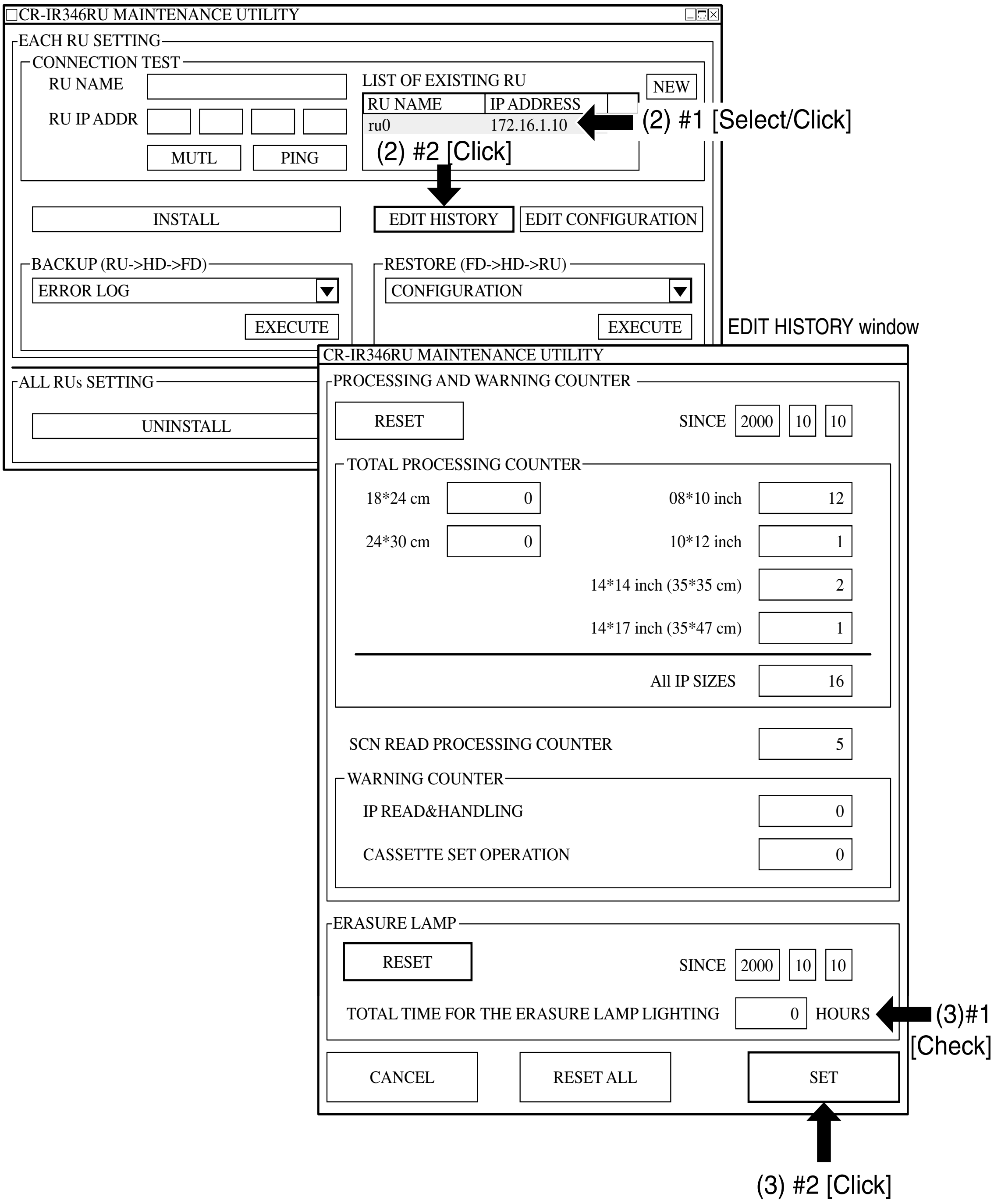
When the erasure lamps are replaced, be sure to reset the erasure lamp lighting time.

(1) Open the MAINTENANCE UTILITY window.

(2) Open the EDIT HISTORY window.

(3) Reset the erasure lamp lighting time.

MAINTENANCE UTILITY window



☐CR-IR346RU MAINTENANCE UTILITY

EACH RU SETTING

CONNECTION TEST

RU NAME

RU IP ADDR

LIST OF EXISTING RU

| RU NAME | IP ADDRESS |
|---|---|
| ru0 | 172.16.1.10 |

BACKUP (RU->HD->FD): ERROR LOG

RESTORE (FD->HD->RU): CONFIGURATION

ALL RUs SETTING

EDIT HISTORY window

CR-IR346RU MAINTENANCE UTILITY

PROCESSING AND WARNING COUNTER

SINCE 2000 10 10

TOTAL PROCESSING COUNTER

| | | | |
|---|---|---|---|
| 18*24 cm | 0 | 08*10 inch | 12 |
| 24*30 cm | 0 | 10*12 inch | 1 |
| | | 14*14 inch (35*35 cm) | 2 |
| | | 14*17 inch (35*47 cm) | 1 |
| | | All IP SIZES | 16 |

SCN READ PROCESSING COUNTER 5

WARNING COUNTER

IP READ&HANDLING 0

CASSETTE SET OPERATION 0

ERASURE LAMP

SINCE 2000 10 10

TOTAL TIME FOR THE ERASURE LAMP LIGHTING 0 HOURS

NEW
MUTL
PING
INSTALL
EDIT HISTORY
EDIT CONFIGURATION
EXECUTE
EXECUTE
UNINSTALL
RESET
RESET
CANCEL
RESET ALL
SET

(2) #1 [Select/Click]

(2) #2 [Click]

(3)#1 [Check]

(3) #2 [Click]

FR6H6079.EPS

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# CR-IR346RU Service Manual

## Installation (IN)

# CR-IR346RU Service Manual – Contents

## Installation (IN)

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## Control Sheet

| Issue date | Revision number | Reason | Pages affected |
|---|---|---|---|
| 10/10/2000 | 00 | New release (FM2887) | All pages |
| 08/30/2001 | 01 | Support for software version A05 (FM3058) | IN-5, 6, 12–14, 17–19, 21.1–21.2, 23, 24–29, 31–35, 38 |
| 12/20/2001 | 03 | Corrections (FM3277) | IN-1, 9 |
| 02/20/2002 | 05 | Corrections (FM3328) | IN-1, 4, 5<br>Appx IN-1-1–Appx IN-1-3 |

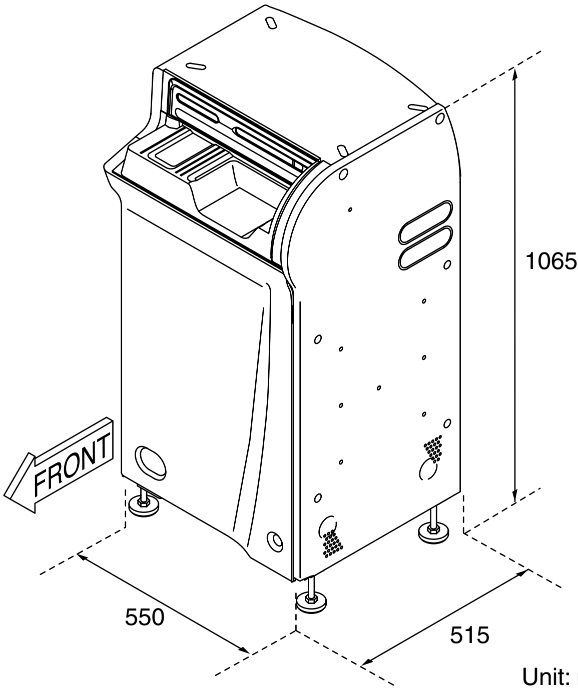
# 1. Specifications of Machine

## ■ Product Code

CR-IR346RU

## ■ Dimensions

W550 x D515 x H1065 (mm)



Unit: mm
FR6H7645.EPS

## ■ Weight

155 kg approx.

## ■ Means for Moving and Fixing the Machine

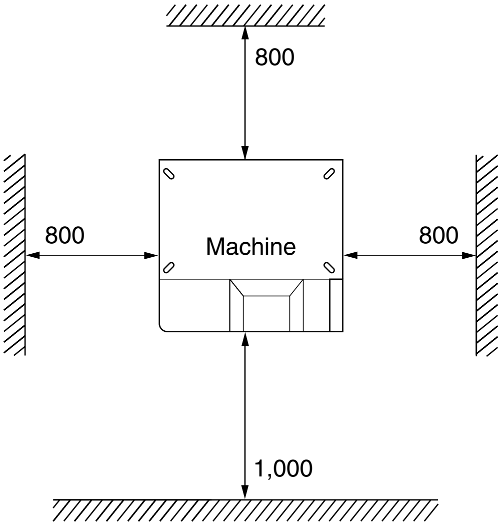
- Moving : Double-wheel caster (variable-direction/no-brake) x4
- Fixing : • Adjustable foot x4
  - Machine retainer x2
  - Table x1 (optional)
  - Table x1 and table retainer x2 (optional)

## ■ Installation Space

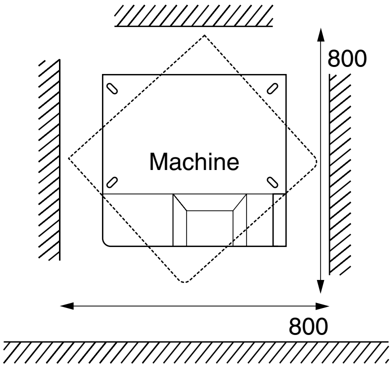
### ◇ *REFERENCE* ◇

*The machine may be installed with its left/right sides and its rear adjacent to the wall. Note, however, that adequate space around the machine should be required so that the distance from its front to the wall is 1,000 mm or greater and there is enough room to allow the machine to rotate.*

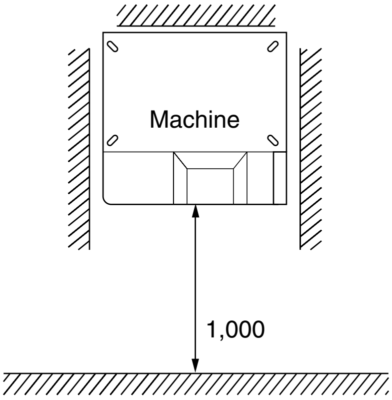
- Space required for servicing


800
800
Machine
800
1,000

- Space required for rotation

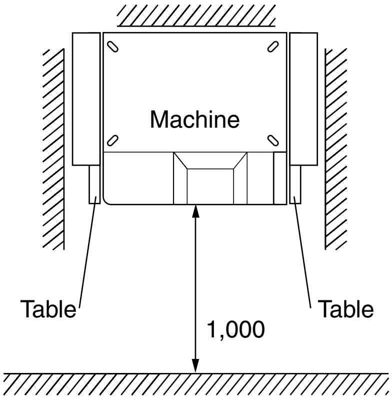

800
Machine
800

- Minimum space for installation


Machine
1,000

✽ : Make sure that servicing space is secured.

- Minimum space for table (full option) installation


Machine
Table
1,000
Table

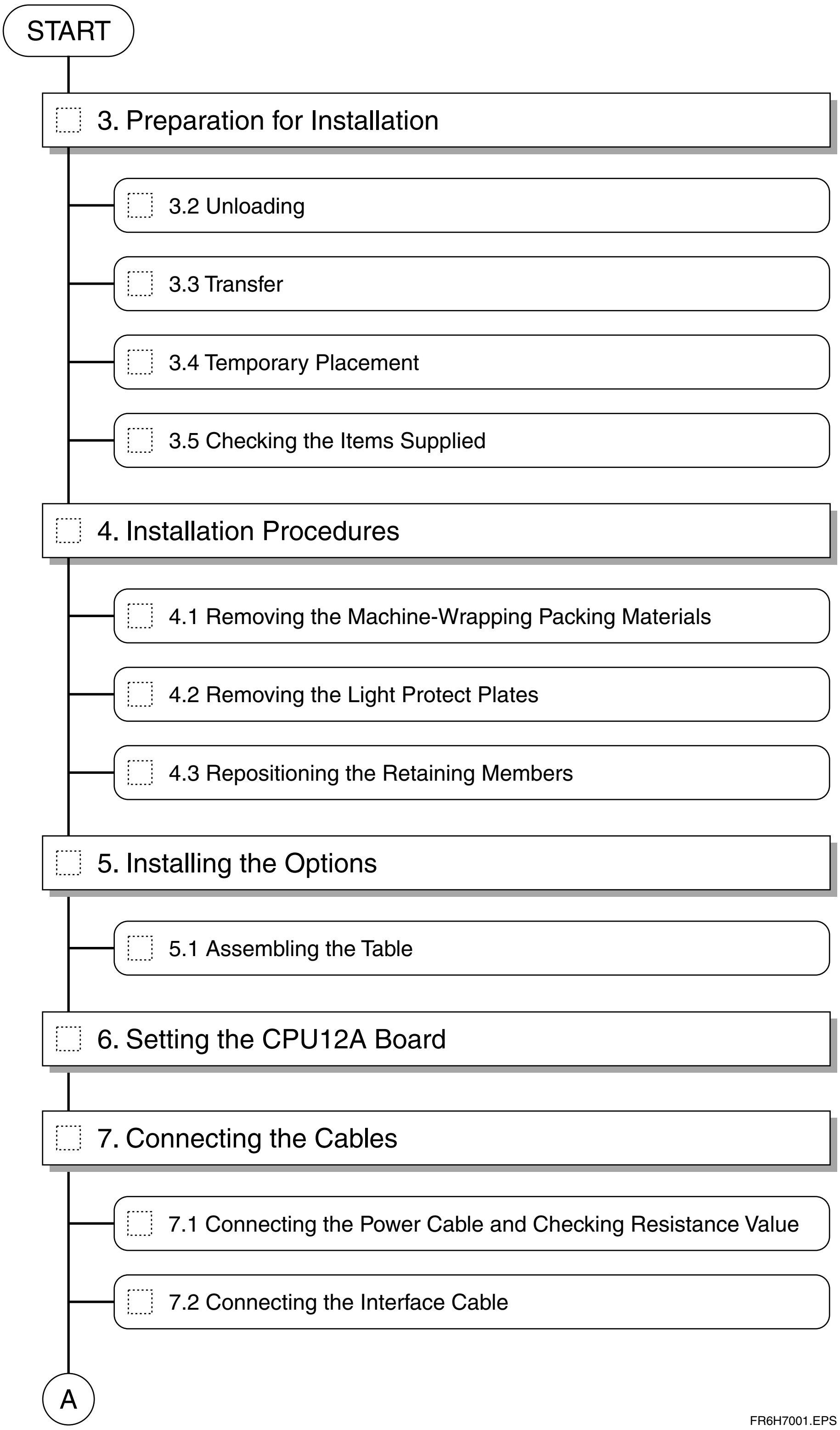
✽ : Make sure that servicing space is secured.

Unit: mm

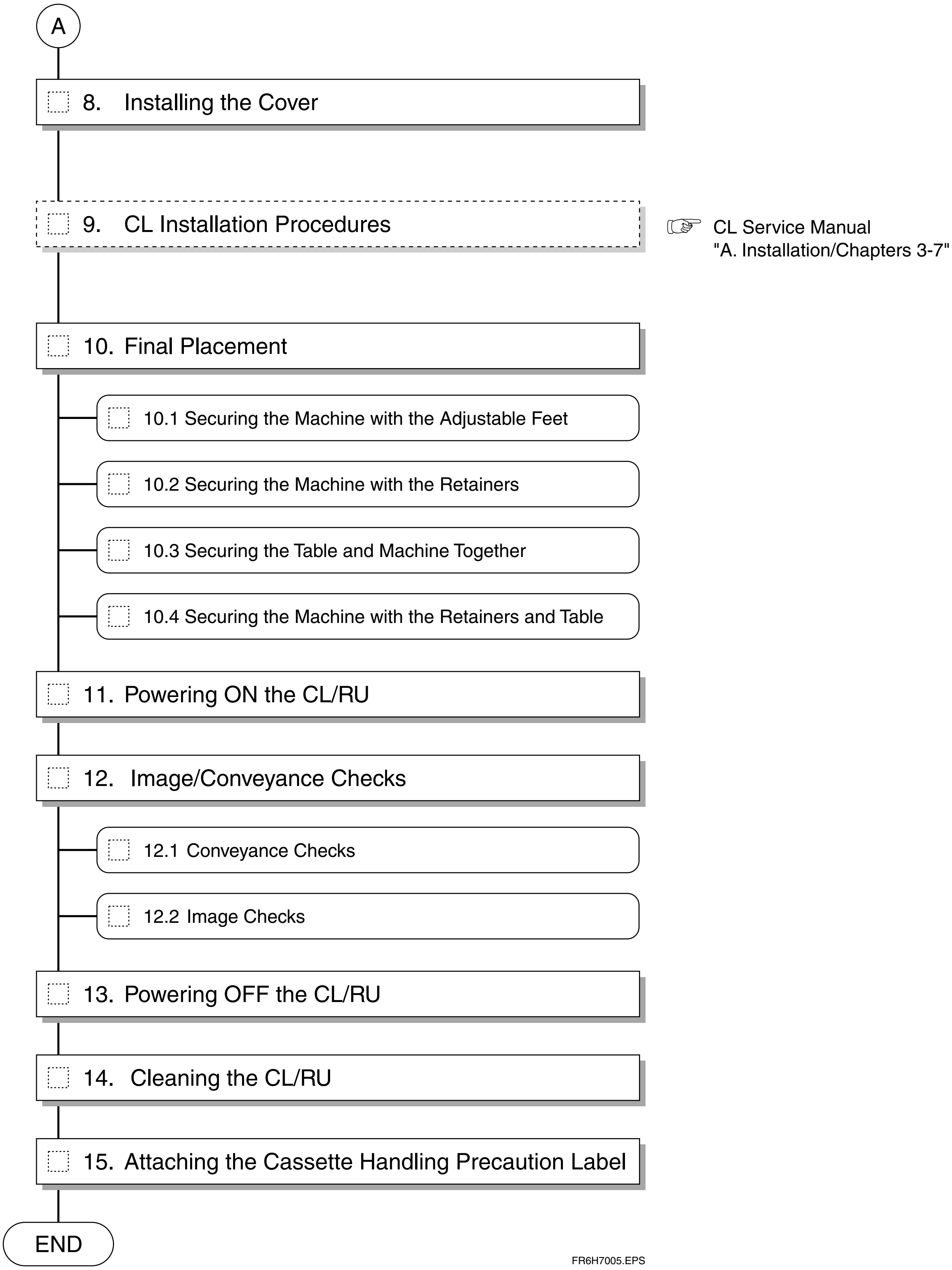
FR6H7004.EPS

# 2. Installation Work Flowchart

## ■ Workflow for First-Time Installation


START
☐ 3. Preparation for Installation
☐ 3.2 Unloading
☐ 3.3 Transfer
☐ 3.4 Temporary Placement
☐ 3.5 Checking the Items Supplied
☐ 4. Installation Procedures
☐ 4.1 Removing the Machine-Wrapping Packing Materials
☐ 4.2 Removing the Light Protect Plates
☐ 4.3 Repositioning the Retaining Members
☐ 5. Installing the Options
☐ 5.1 Assembling the Table
☐ 6. Setting the CPU12A Board
☐ 7. Connecting the Cables
☐ 7.1 Connecting the Power Cable and Checking Resistance Value
☐ 7.2 Connecting the Interface Cable
A

FR6H7001.EPS


A
☐ 8. Installing the Cover
☐ 9. CL Installation Procedures
☞ CL Service Manual "A. Installation/Chapters 3-7"
☐ 10. Final Placement
☐ 10.1 Securing the Machine with the Adjustable Feet
☐ 10.2 Securing the Machine with the Retainers
☐ 10.3 Securing the Table and Machine Together
☐ 10.4 Securing the Machine with the Retainers and Table
☐ 11. Powering ON the CL/RU
☐ 12. Image/Conveyance Checks
☐ 12.1 Conveyance Checks
☐ 12.2 Image Checks
☐ 13. Powering OFF the CL/RU
☐ 14. Cleaning the CL/RU
☐ 15. Attaching the Cassette Handling Precaution Label
END

FR6H7005.EPS

## ■ Workflow for On-Site Relocation

When the CR-IR346RU is to be relocated within the institution, reference should be made to "Appendix 1. On-Site Relocation."

# 3. Preparation for Installation

## 3.1 Precautions Regarding Installation

The place where the machine is to be installed needs to meet the criteria set forth in “Getting Started” and “■ Installation Site Requirements”.

Preinstallation procedures should be performed beforehand for necessary construction work, electrical work, and air-conditioning system installation.

### ■ Installation Site Requirements

Avoid the following installation sites:

- Places where the temperature changes drastically.
- Places near heat sources such as heaters.
- Places where water leakage or equipment submersion may occur.
- Places where corrosive gas may be generated.
- Dusty places.
- Places where the machine is subject to constant or excessive vibration or shock.
- Places that are exposed to direct sunlight.

### ■ Handling Precautions for Printed Circuit Boards and Optical Unit

When servicing a board or optical unit, use a wristband to ground your body. If you body is not grounded, the electrostatic buildup on your body may damage the electronic parts.

## 3.2 Unloading

**CAUTION**

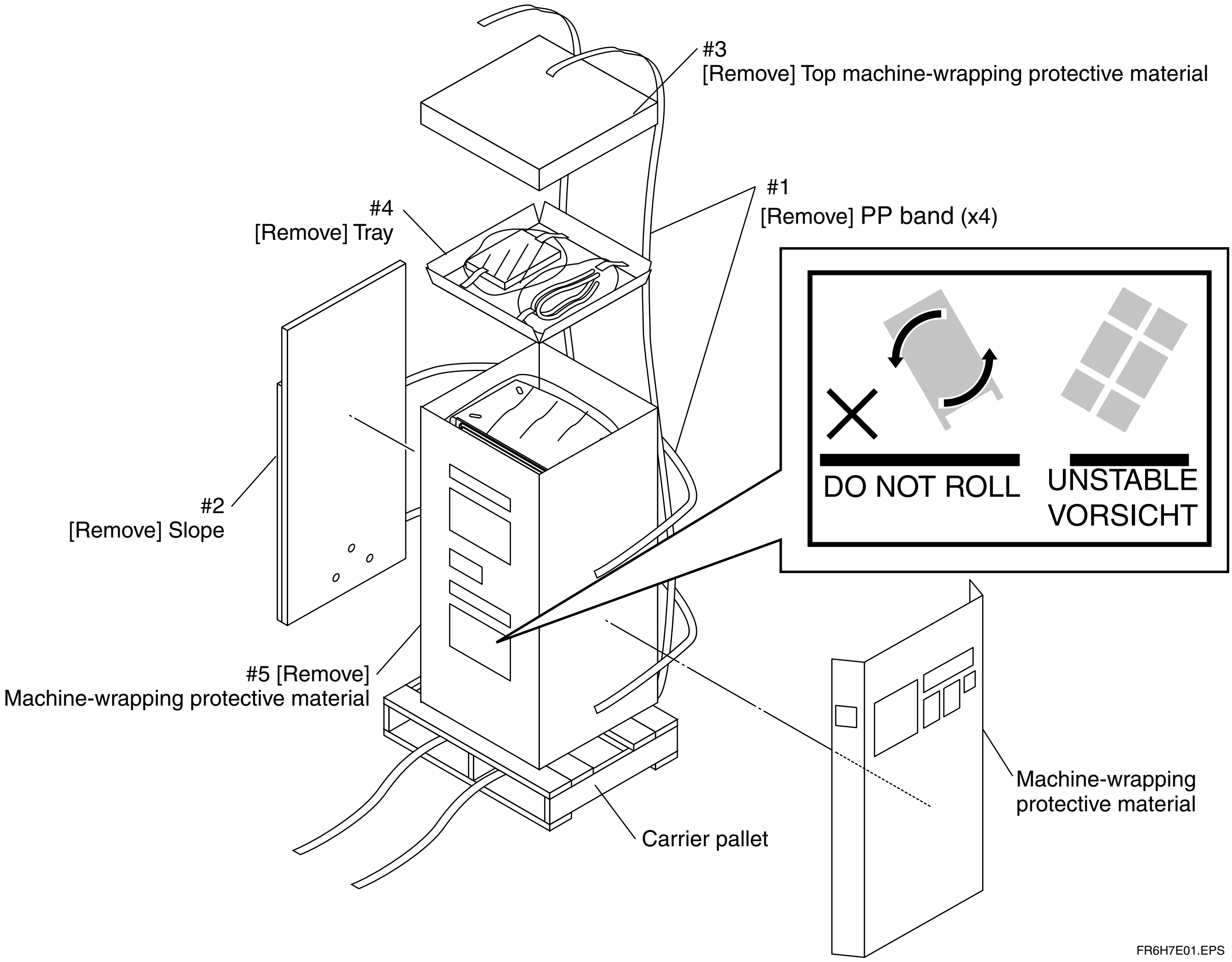
*When unloading or transferring the machine, use care not to incline the machine. Because the machine is not fixed to the carrier pallet, the machine may topple down.*

**◆ NOTE ◆**

*Before unloading the machine, secure a proper machine transfer route.*

(1) Move down the machine together with the carrier pallet from the load-carrying platform of the truck.

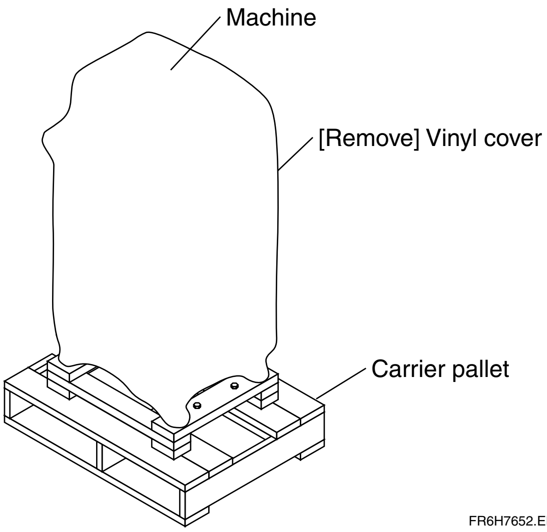
(2) Remove the machine-wrapping protective material (reinforced corrugated board).


#3
[Remove] Top machine-wrapping protective material
#1
[Remove] PP band (x4)
#4
[Remove] Tray
#2
[Remove] Slope
#5 [Remove]
Machine-wrapping protective material
DO NOT ROLL
UNSTABLE
VORSICHT
Carrier pallet
Machine-wrapping
protective material
FR6H7E01.EPS

**◆ *INSTRUCTION* ◆**

*During the winter season, allow the machine to stand under its packaged condition for sufficient time before unpacking it.*
*If the machine is unpacked immediately after it is carried into the room, moisture condensation may occur on the machine.*

(3) Remove the vinyl cover.


Machine
[Remove] Vinyl cover
Carrier pallet

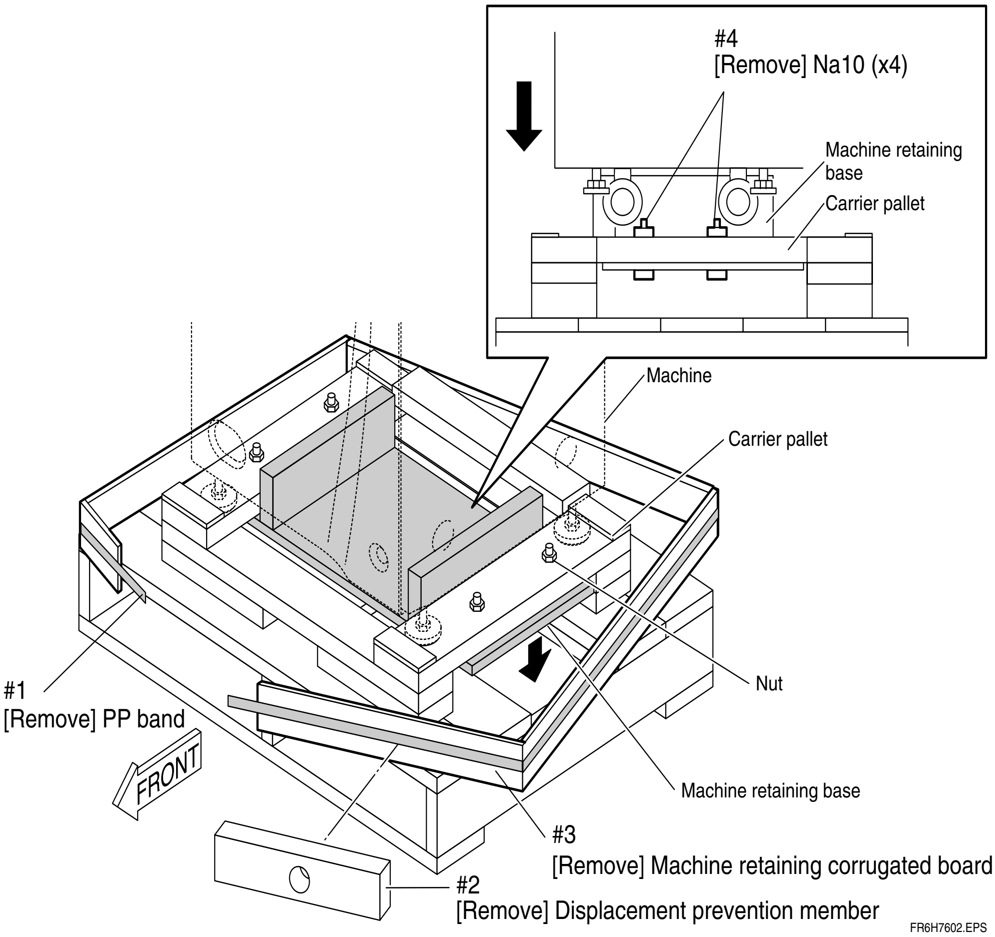
FR6H7652.EPS

**CAUTION**

*To remove the four nuts that secure the machine retaining base and carrier pallet, loosen the four nuts evenly one by one, and then remove them.*

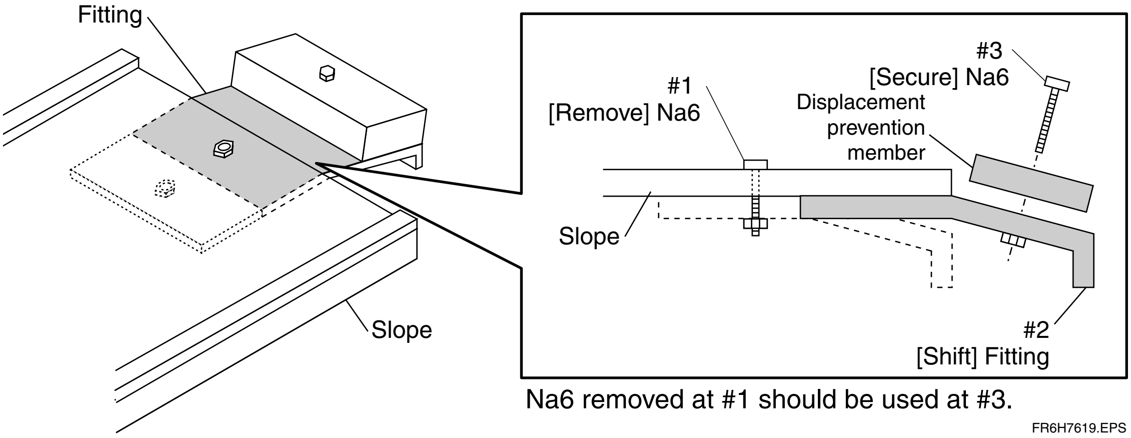
(4) Lower the machine onto the carrier pallet.

As the four nuts are loosened, the machine retaining base is lowered, so that the machine rests down on the carrier pallet.


#4
[Remove] Na10 (x4)
Machine retaining base
Carrier pallet
Machine
Carrier pallet
Nut
Machine retaining base
#1
[Remove] PP band
FRONT
#3
[Remove] Machine retaining corrugated board
#2
[Remove] Displacement prevention member

FR6H7602.EPS

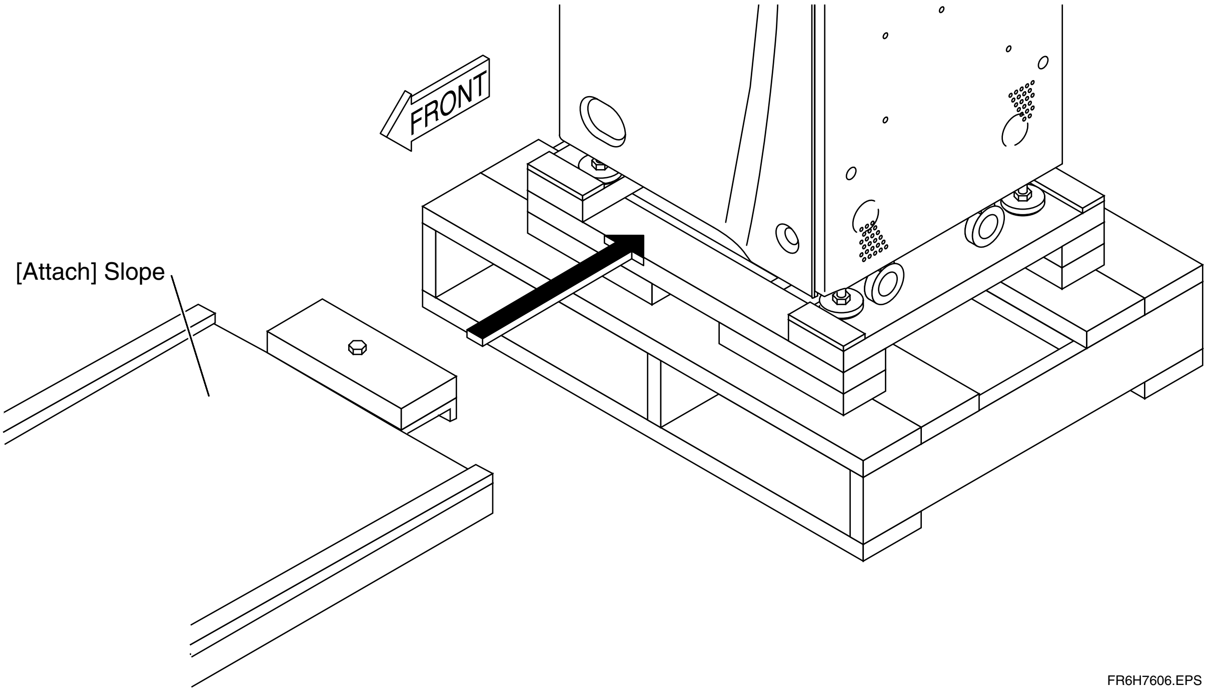
(5) Attach the displacement prevention member.


Fitting
Slope
#1
[Remove] Na6
#3
[Secure] Na6
Displacement prevention member
Slope
#2
[Shift] Fitting

Na6 removed at #1 should be used at #3.

FR6H7619.EPS

(6) Slide the position of the fitting of the slope.


FRONT
[Attach] Slope
FR6H7606.EPS

### ◇ *REFERENCE* ◇

*The slope may be attached only to the front side of the machine.*

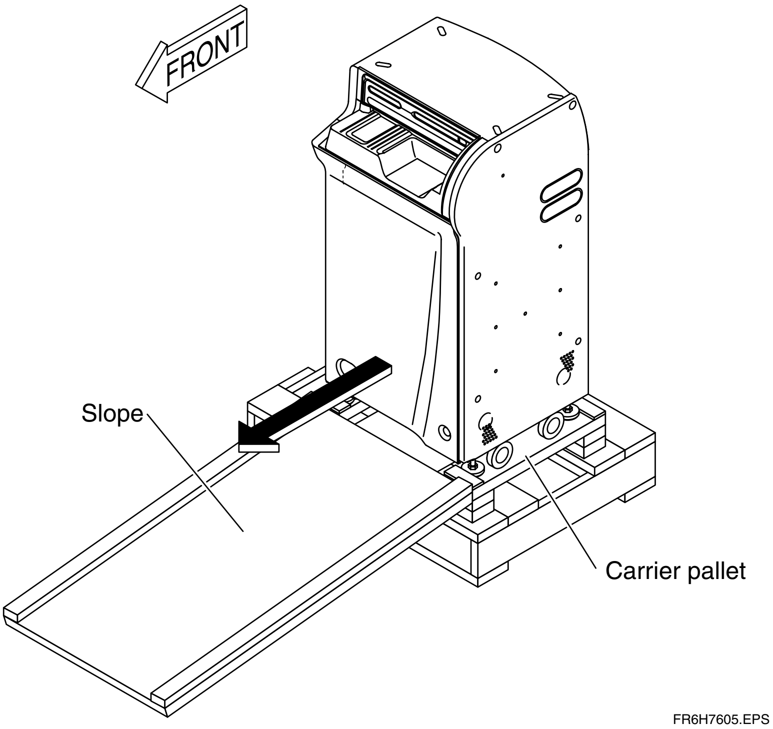
**WARNING**

*When unloading the machine from the carrier pallet, two persons should cooperate to do so using care to prevent it from toppling down.*
*In this case, the two persons should be positioned, one at the right-hand side and the other at the left-hand side of the machine.*

◆ **NOTE** ◆

*The adjustable feet should be raised all the way up to their upper limit.*

(7) Lower the machine from the carrier pallet.



FR6H7605.EPS

## 3.3 Transfer

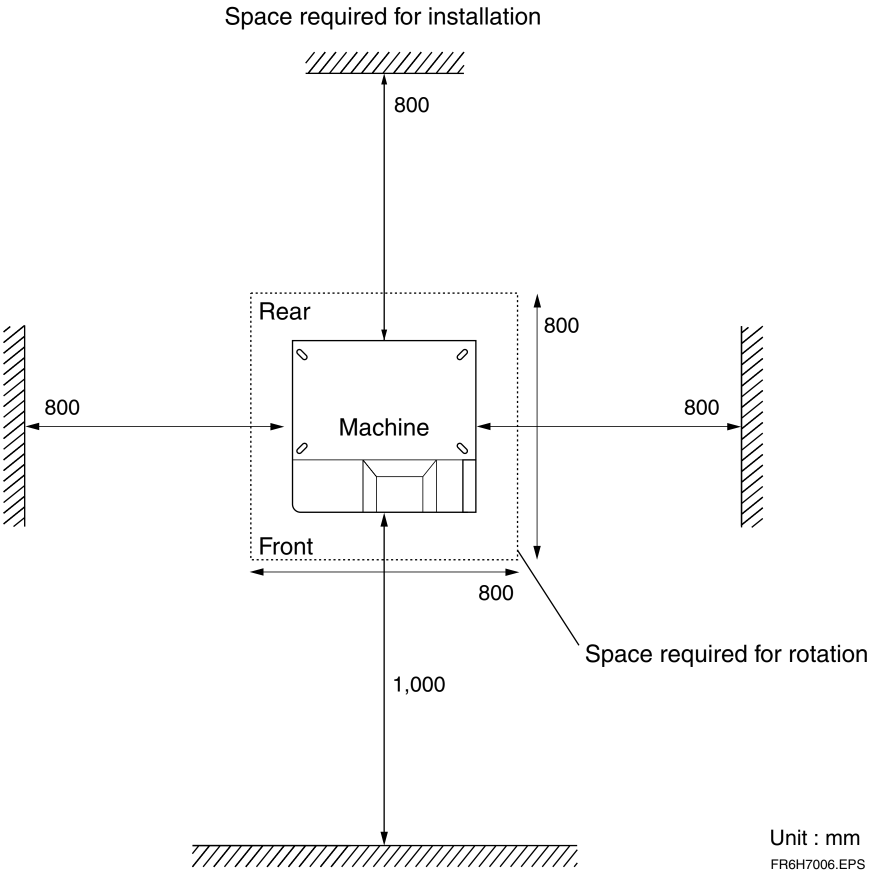
**CAUTIONS**

- *When transferring the machine by use of its casters, raise the adjustable feet of the machine all the way up to their upper limit.*
- *When bringing the machine into the installation place, support it so that it will not topple down.*
- *When the machine should be moved over some step or bump, move it as slowly as possible to avoid shock to it. Note that the step over which the machine may move is about 10 mm high at most.*

(1) Transfer the machine into the installation place.

## 3.4 Temporary Placement

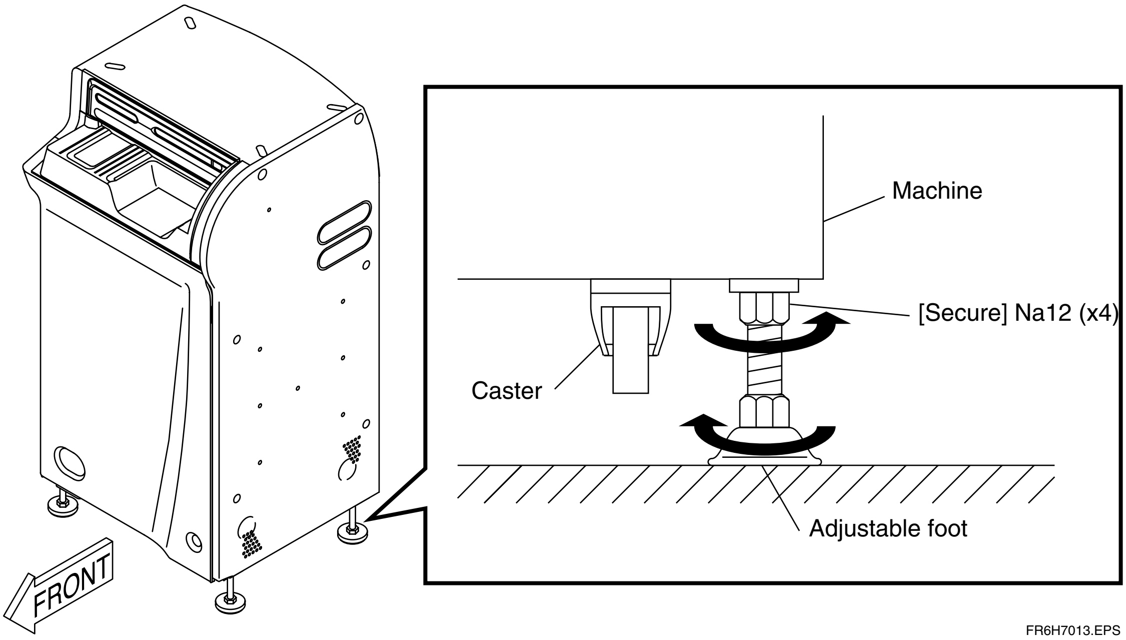
(1) Secure space required for installation procedures and temporarily place the machine.


Space required for installation
800
Rear
800
800
Machine
800
Front
800
Space required for rotation
1,000
Unit : mm
FR6H7006.EPS

### ◇ REFERENCE ◇

*When there is enough space (800 mm around the machine) to allow the machine to rotate, installation procedures may be performed only if 1,000 mm or greater in space is secured on one side of the machine.*

(2) Secure the machine with the adjustable feet in place.


FRONT
Machine
[Secure] Na12 (x4)
Caster
Adjustable foot
FR6H7013.EPS

## 3.5 Checking the Items Supplied

Check whether all the items are supplied in accordance with the PACKING LIST that is contained in each carton.

**◆ *NOTE* ◆**

*The Test Result Sheet contained should be kept by the service person.*

### ■ Machine Main Body

| Check | Item | Qty. | Remarks |
|---|---|---|---|
|  | Machine main body | 1 |  |

TR6H7002.EPS

### ■ Accessories

[Specifications for use in Japan]

| Check | Item | Qty. | Remarks |
|---|---|---|---|
|  | Instruction Manual | 1 |  |
|  | Test Result Sheet | 1 |  |
|  | Warranty Sheet | 1 |  |
|  | Machine-specific data floppy diskette | 1 | 3.5-inch/1.44 MB |
|  | CD-ROM (for RU) | 1 | For backup<br>(Installed prior to shipment) |
|  | Label | 1 | One set (RU exposure marker caution label) |
|  |  | 1 | One set (Inch/metric label) |
|  | Fuse set | 1 | Spare |
|  | Ferrite bead | 1 | E04SR301334 |
|  | CL/RU connection cable | 1 | Used only for direct connection without hub<br>Category 5 cable (cross, UTP type), 1.95 m |
|  | RU power cable | 1 | 100-120V |

TR6H7003.EPS

[Specifications for use outside Japan]

| Check | Item | Qty. | Remarks |
|---|---|---|---|
|  | Instruction Manual | 1 |  |
|  | Test Result Sheet | 1 |  |
|  | Machine-specific data floppy diskette | 1 | 3.5-inch/1.44 MB |
|  | CD-ROM (for RU) | 1 | For backup<br>(Installed prior to shipment) |
|  | Label | 1 | One set (RU exposure marker caution label) |
|  |  | 1 | One set (Inch/metric label) |
|  | Fuse set | 1 | Spare |
|  | Ferrite bead | 1 | E04SR301334 |
|  | CL/RU connection cable | 1 | Used only for direct connection without hub<br>Category 5 cable (cross, UTP type), 1.95 m |

TR6H7010.EPS

## ■ Optional Items

[Specification for use in Japan]

| Check | Item | Qty. | Remarks |
|---|---|---|---|
| | Retainer | 1 | For retaining the machine |

TR6H7004.EPS

[Specifications for use outside Japan]

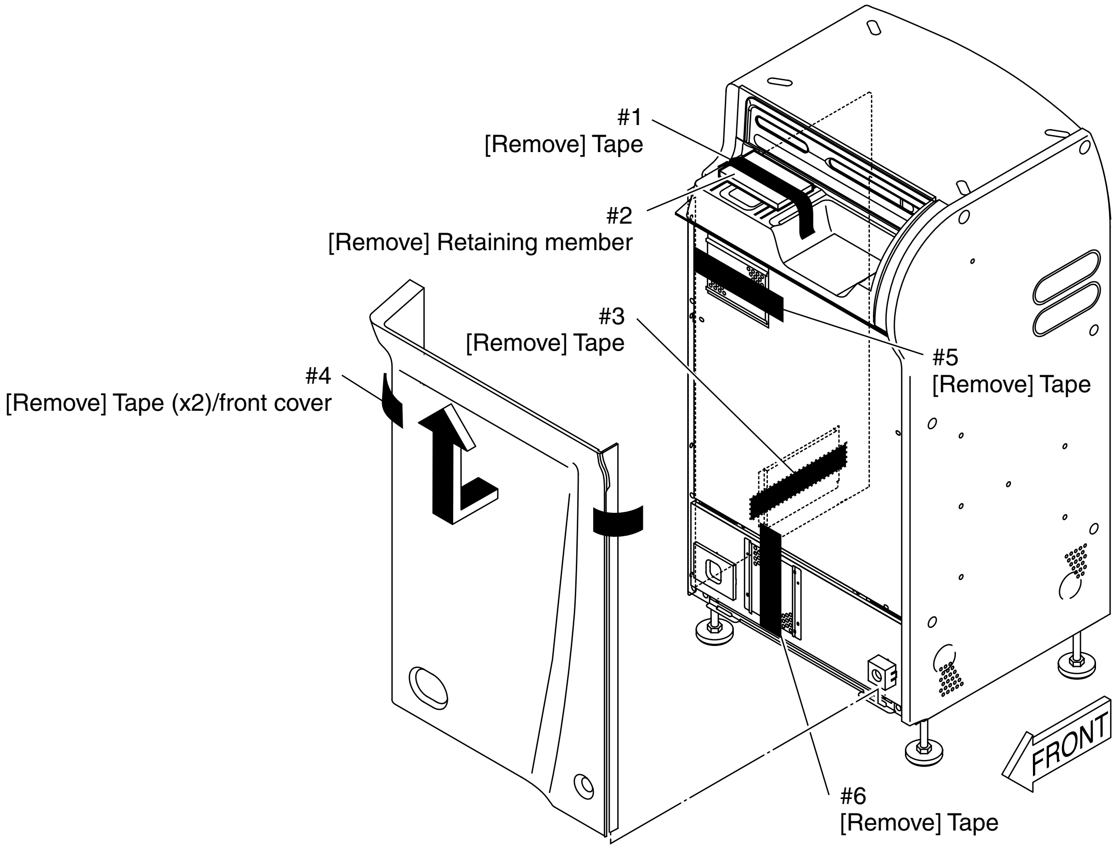
| Check | Item | Qty. | Remarks |
|---|---|---|---|
| | Retainer | 1 | For retaining the machine |
| | RU power cable | 1 | • 100-120 V: U.S., Canada, etc.<br>• 200-230 V: Germany, France, Spain, Sweden, etc.<br>• 240 V: U.K. |

TR6H7011.EPS

# 4. Installation Procedures

## 4.1 Removing the Machine-Wrapping Packing Materials

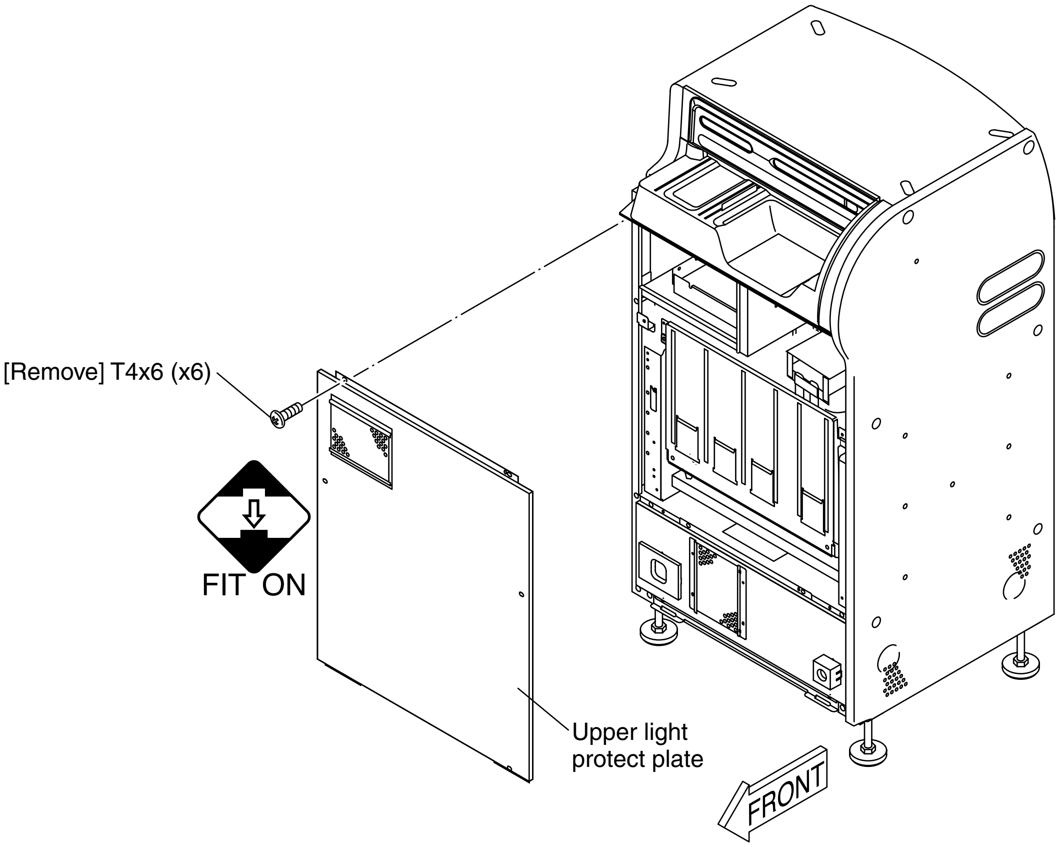
(1) Remove the packing materials.


#1
[Remove] Tape
#2
[Remove] Retaining member
#3
[Remove] Tape
#4
[Remove] Tape (x2)/front cover
#5
[Remove] Tape
#6
[Remove] Tape
FRONT

FR6H7607.EPS

## 4.2 Removing the Light Protect Plates

(1) Remove the light protect plates.


[Remove] T4x6 (x6)
FIT ON
Upper light protect plate
FRONT

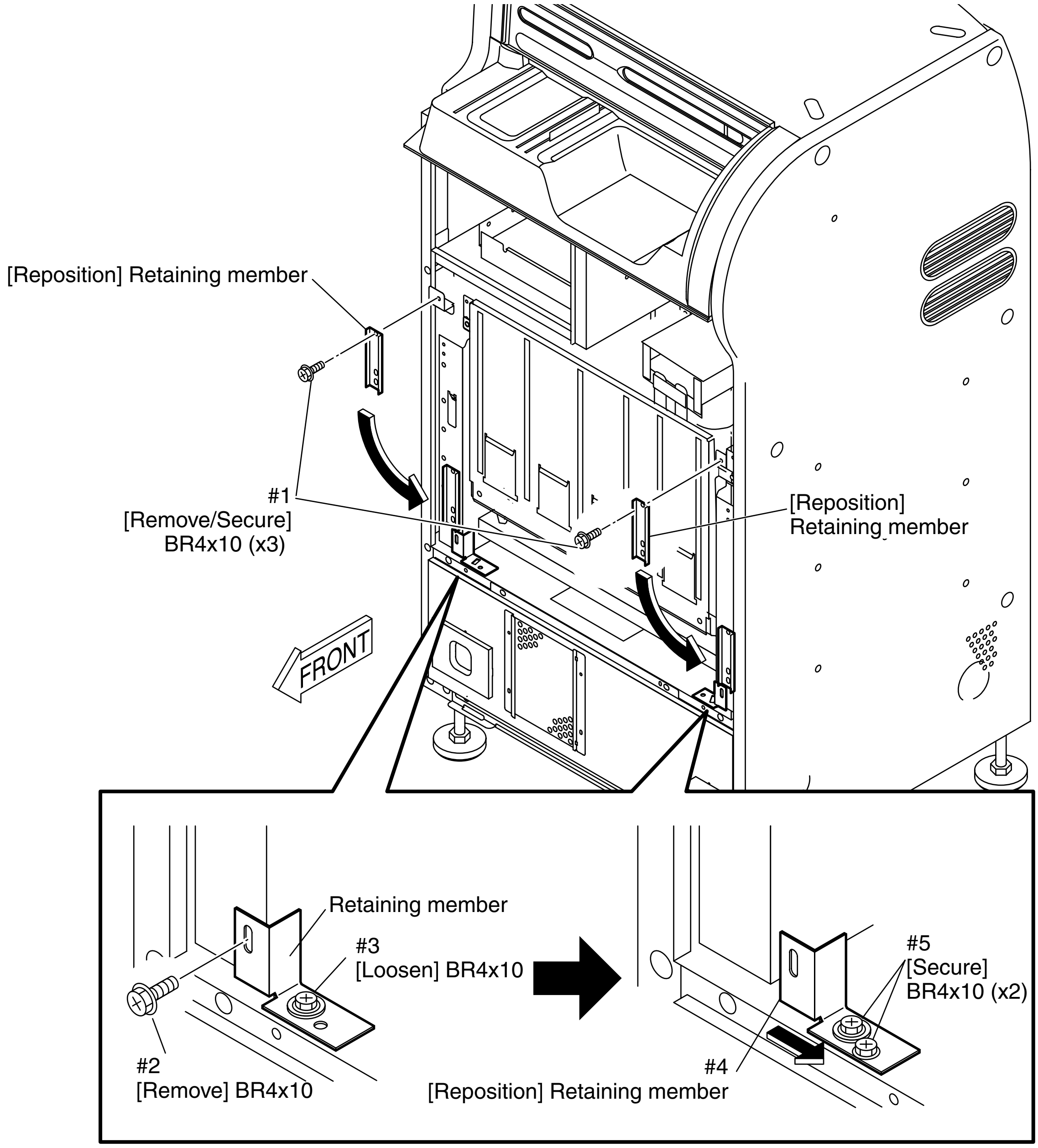
FR6H7657.EPS

## 4.3 Repositioning the Retaining Members

**◇ REFERENCE ◇**

*The retaining members may be removed along the rope.*

(1) Reposition the retaining members.


[Reposition] Retaining member
#1
[Remove/Secure]
BR4x10 (x3)
[Reposition]
Retaining member
FRONT
Retaining member
#3
[Loosen] BR4x10
#5
[Secure]
BR4x10 (x2)
#2
[Remove] BR4x10
#4
[Reposition] Retaining member
FR6H7609.EPS

**◇ REFERENCE ◇**

*One screw for each of the right and left retaining members removed at step #2 should be used at step #5.*

(2) Attach the upper light protect plate.

☞ “4.2 Removing the Light Protect Plates”

# 5. Installing the Options

## 5.1 Assembling the Table

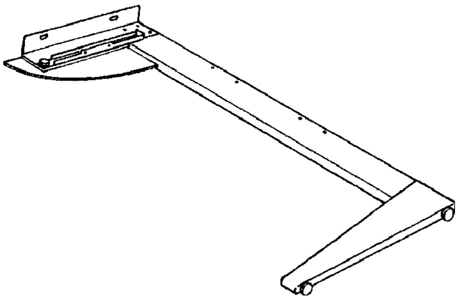
### ■ Composition of Optional Parts

◇ ***REFERENCES*** ◇

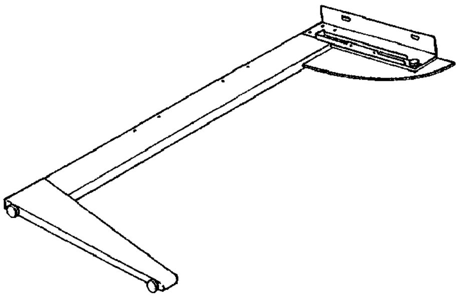
- *Those shown in illustration Nos. 12 and 15 are used for installation with the table. "10.3 Securing the Table and Machine Together"*
- *Those shown in illustration Nos. 12-17 are used for table installation. "10.4 Securing the Machine with the Retainers and Table"*

● Parts used to assemble the table

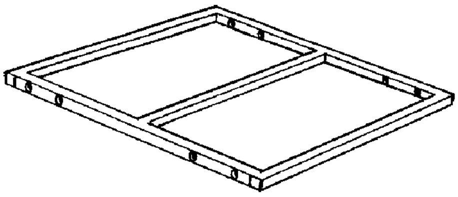
1. Pillar (left)



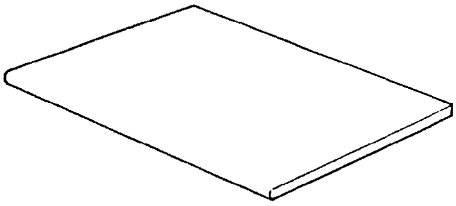
2. Pillar (right)



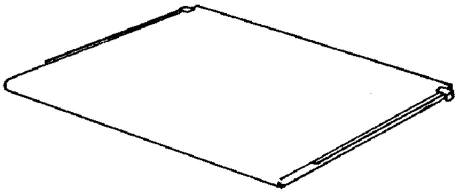
3. Rear pipe



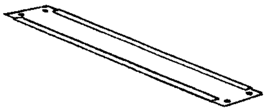
4. Top plate



5. Shelf



6. Bracket



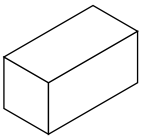
7. T6x35 (x8)

8. T6x12 (x4)

9. T4x6 (x4)

FR6H7701.EPS

10. Shock absorbing material (x2)

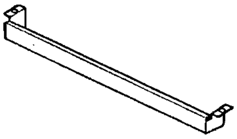


11. Cover (x10)

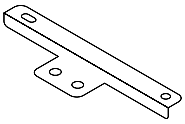
FR6H7748.EPS

● Parts used to secure the machine

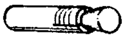
12. Bracket



13. Retainer (x2)

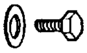


14. Na12 (x4)



15. T6x12 (x2)

16. Bolt 12x20 (x4), W12 (x4)

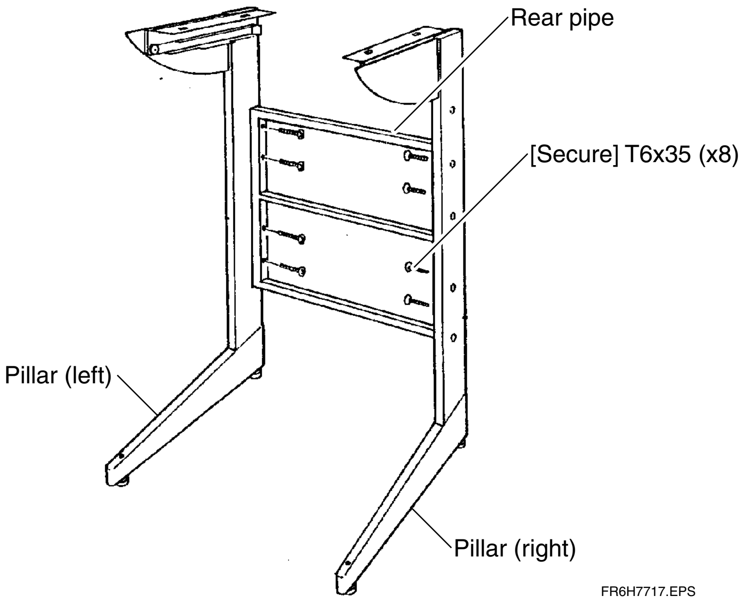


17. Bolt 10x20 (x4)

FR6H7710.EPS

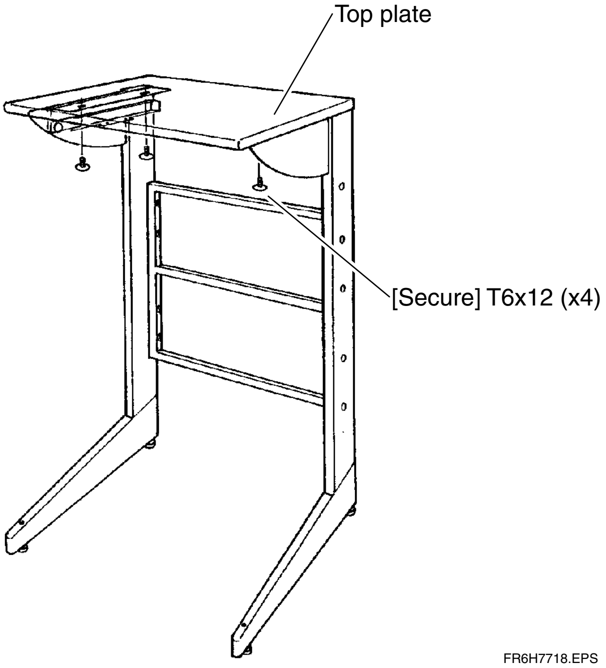
## ■ Assembly Procedures

(1) Attach the rear pipe.


Rear pipe
[Secure] T6x35 (x8)
Pillar (left)
Pillar (right)

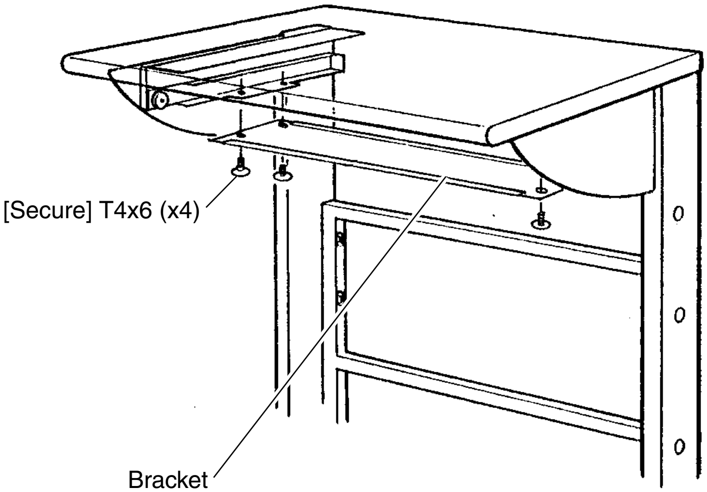
FR6H7717.EPS

(2) Attach the top plate.


Top plate
[Secure] T6x12 (x4)

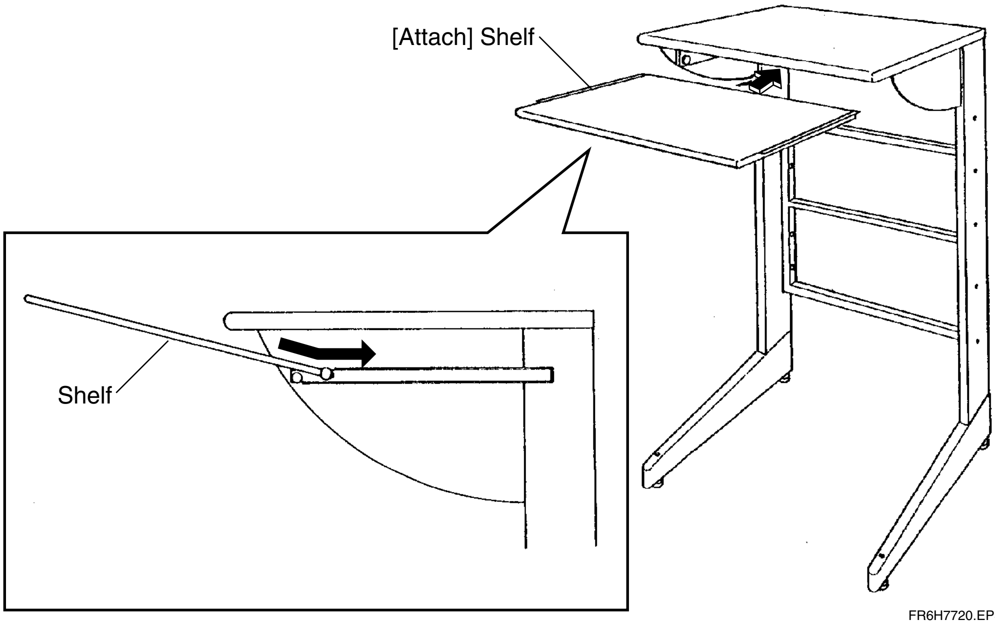
FR6H7718.EPS

(3) Attach the bracket.


[Secure] T4x6 (x4)
Bracket

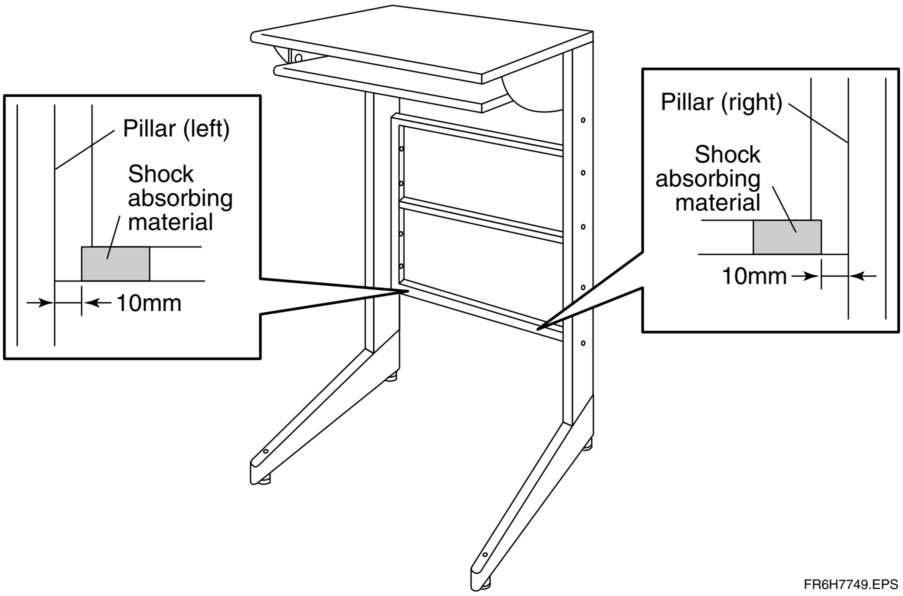
FR6H7719.EPS

(4) Attach the shelf.

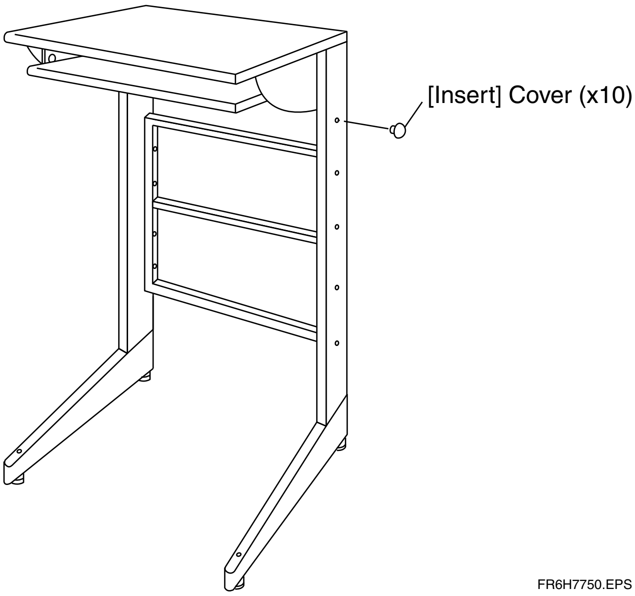

[Attach] Shelf
Shelf

FR6H7720.EPS

(6)  Attach the shock absorbing  materials.


Pillar (left)
Shock absorbing material
10mm
Pillar (right)
Shock absorbing material
10mm
FR6H7749.EPS

(6)  Attach the covers.


[Insert] Cover (x10)
FR6H7750.EPS

*BLANK PAGE*

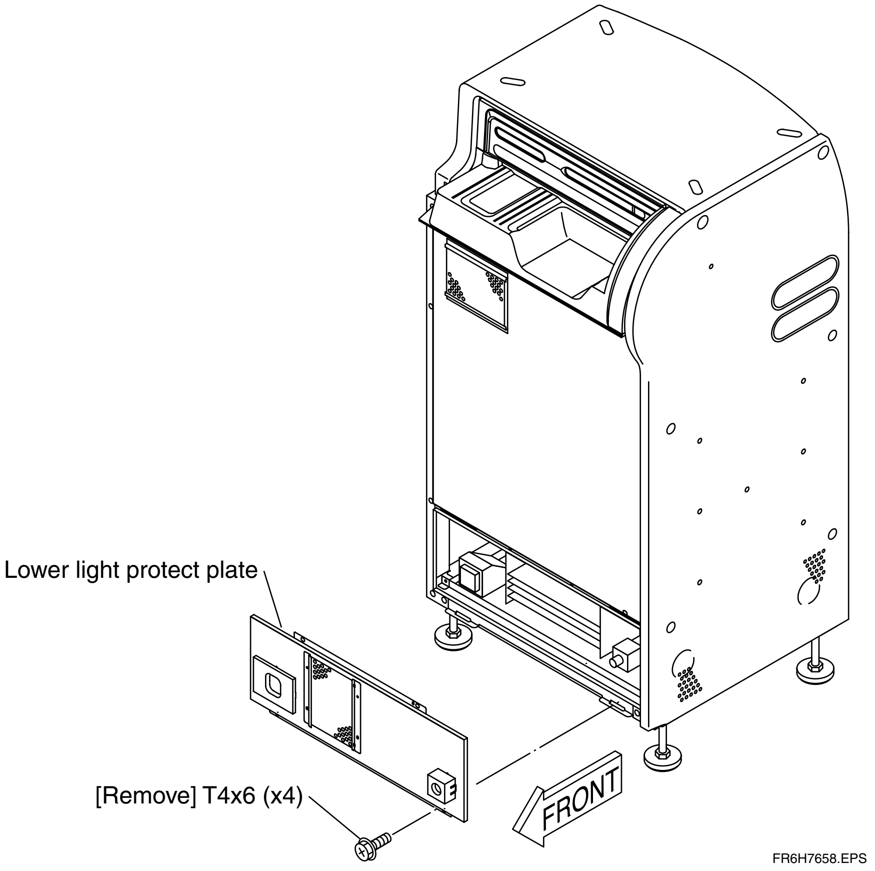
# 6. Setting the CPU12A Board

The DIP switches on the CPU12A board should be set only when the cassette type is to be changed or when the barcode reader availability setting is to be changed.

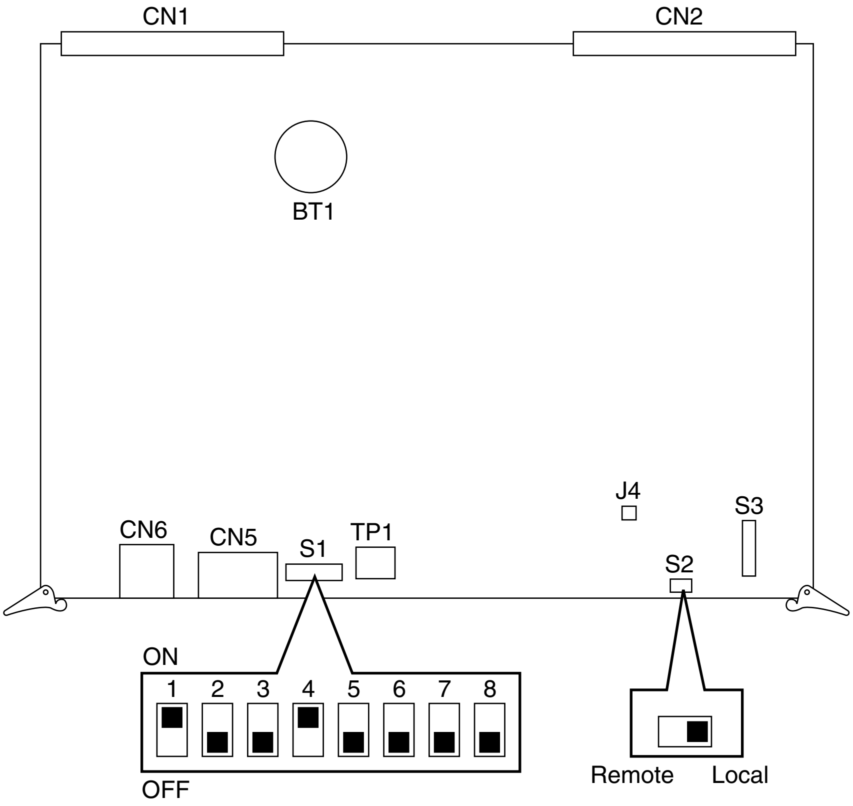
**CAUTION**

*Before handling the board, wear the wristband.*

(1) Remove the lower light protect plate.


Lower light protect plate
[Remove] T4x6 (x4)
FRONT
FR6H7658.EPS

(2) Set the DIP switches as appropriate.



S1 settings

| bit | Description | ON | OFF | Default (factory preset) |
|---|---|---|---|---|
| 1 | Service terminal connection enable/disable | – | – | ON (fixed) |
| 2 | For design analysis | – | – | OFF (fixed) |
| 3 | Cassette type selection | Metric | INCH | OFF<br>(It varies depending on the specifications prior to shipment.) |
| 4 | Barcode reader availability selection | With BCR | Without BCR | ON |
| 5 | For design analysis | – | – | OFF (fixed) |
| 6 | Not used | | | OFF (fixed) |
| 7 | Not used | | | OFF (fixed) |
| 8 | For design analysis | – | – | OFF (fixed) |

S2 settings

| Description | Remote | Local | Default |
|---|---|---|---|
| Interlink with CL | – | – | Local (fixed) |

FR6H7659.EPS

(3) Attach the lower light protect plate.

# 7. Connecting the Cables

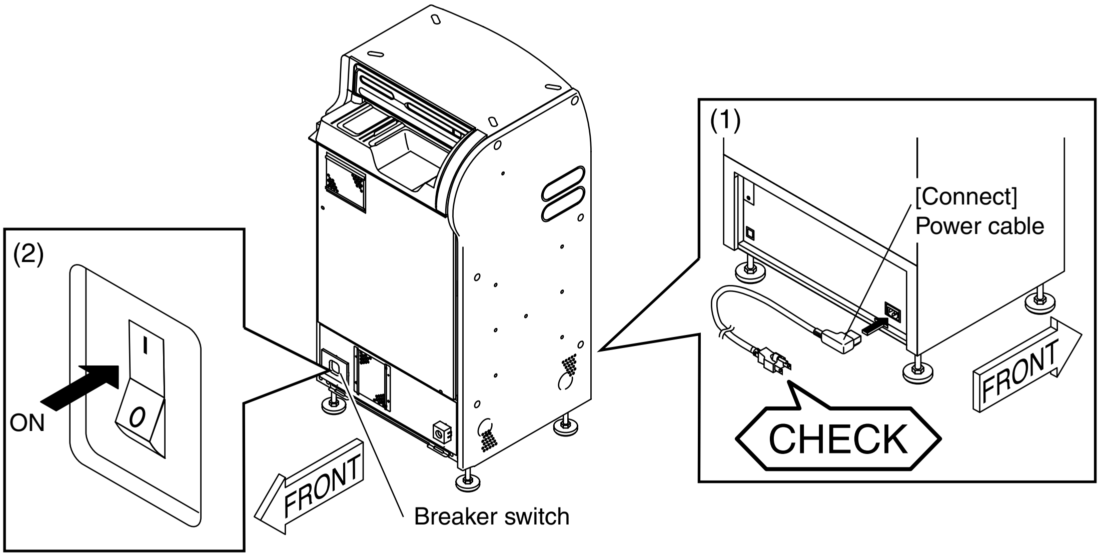
## 7.1 Connecting the Power Cable and Checking Resistance Value

**WARNING**

*Before measuring the resistance value, make sure that the power plug is unplugged from the outlet.*

(1) Connect the power cable.

(2) Place the breaker switch in the ON position.

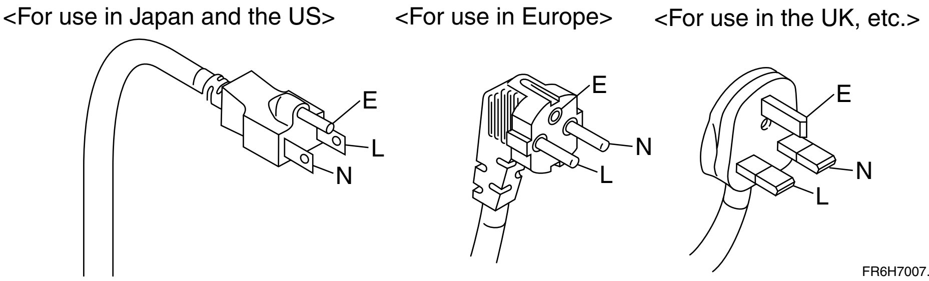

(2)
ON
I
0
FRONT
Breaker switch
(1)
[Connect]
Power cable
FRONT
CHECK

FR6H7638.EPS

(3) Measure the resistance value.

(Reference value)

| Terminal | L – N | L – E | N – E |
|---|---|---|---|
| Resistance value | 100 k Ω – | ∞ | ∞ |



FR6H7007.EPS

(4) Place the breaker switch in the OFF position.

## 7.2 Connecting the Interface Cable

⚠ **CAUTION**

*A telephone cable should not be plugged into the I/F cable connector.*
*The type of cable compatible with this machine is an IEC950/UL1950-listed cable only.*

**◆ NOTES ◆**

- *Either the UTP type or STP type of the I/F cable may be connected to the CR-IR346RU. However, even when the I/F cable is of shielded type (STP type), a ferrite bead should be attached to it.*
- *Make sure that 50 to 80 mm of the cable protrudes from the ferrite bead (on the side you will install into the RU).*

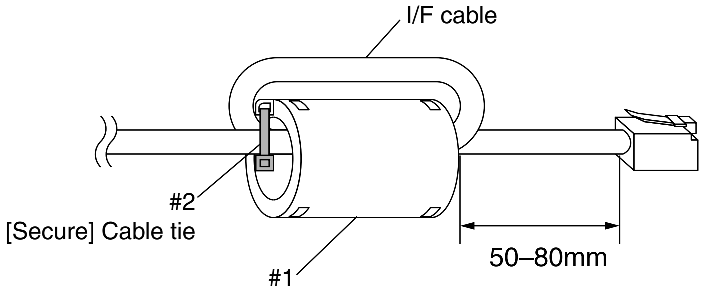
## 7.2.1 Direct Connection of the CL/RU

**◆ NOTE ◆**

*For the I/F cable used for direct connection, a cross cable should be used.*

(1) Attach a ferrite bead to the I/F cable.

To do so, wrap the cable once completely around the ferrite bead and tie the cable and its loop together.

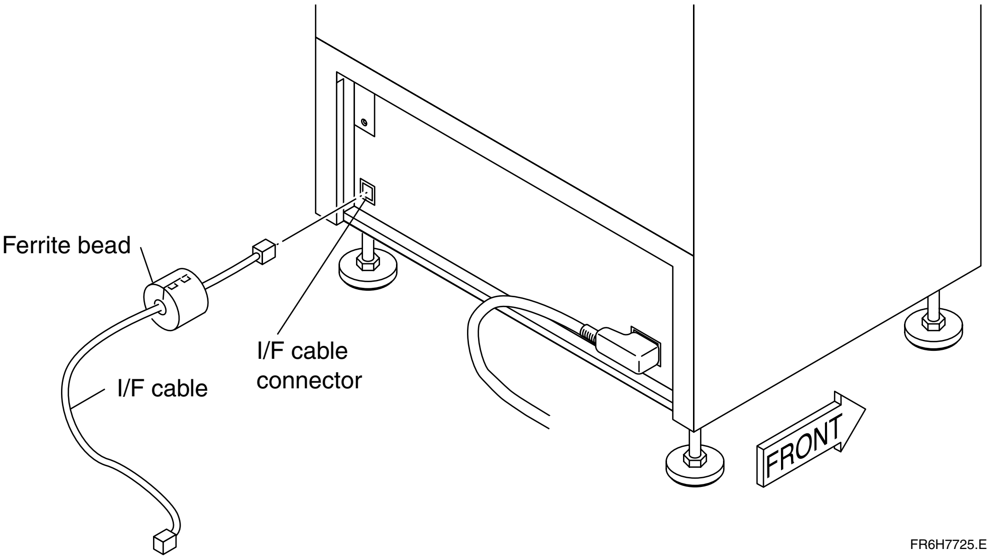

I/F cable
#2
[Secure] Cable tie
#1
[Attach] Ferrite bead
50–80mm

FR6H7810.EPS

(2) Connect the I/F cable to the I/F cable connector of the RU.

**◇ REFERENCE ◇**

*The I/F cable should be connected with its ferrite bead end on the RU side.*


Ferrite bead
I/F cable
I/F cable connector
FRONT

FR6H7725.EPS

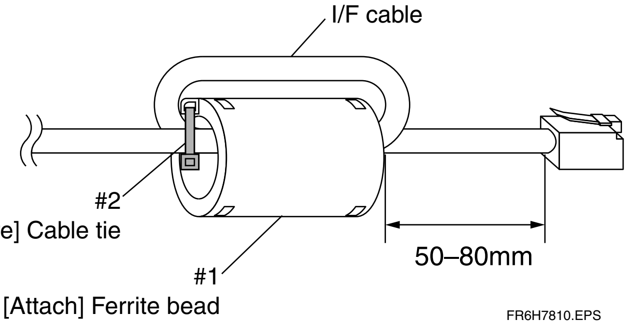
## 7.2.2 Network Connection

**◆ NOTE ◆**

*For the I/F cable used for network connection, a straight cable should be used.*

(1) Attach a ferrite bead to the I/F cable.

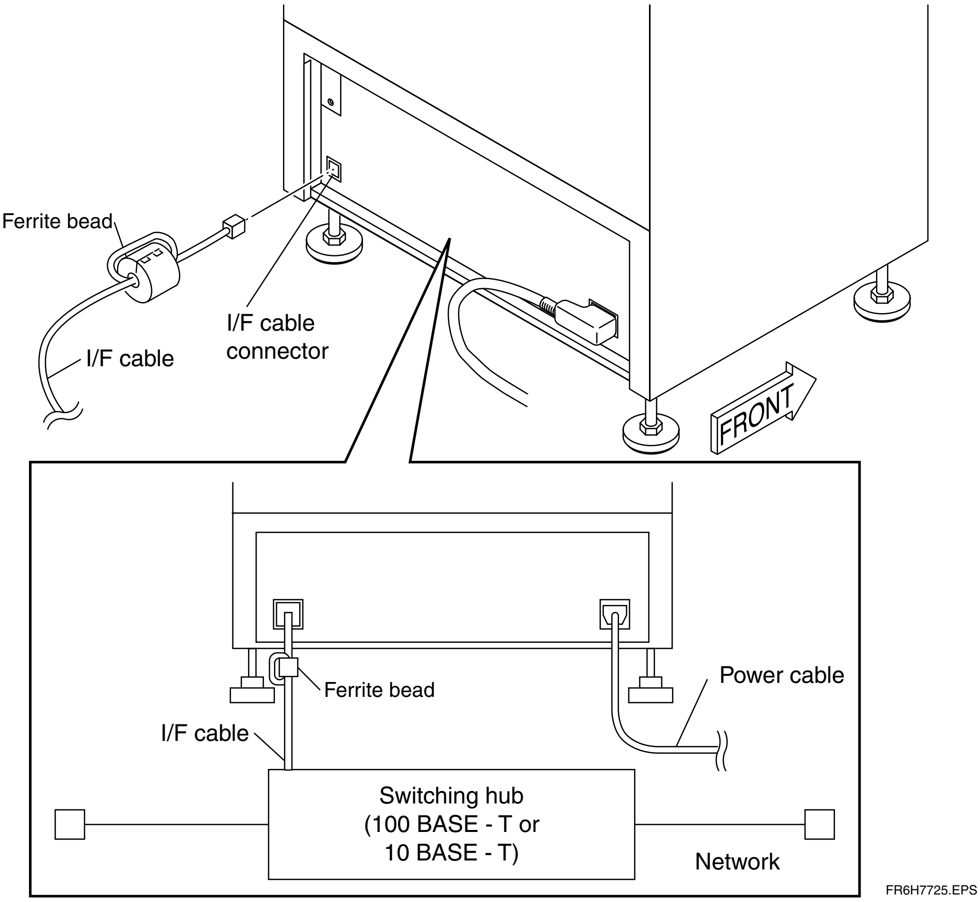
To do so, tie the cable and its loop together.


I/F cable
#2
[Secure] Cable tie
#1
[Attach] Ferrite bead
50–80mm
FR6H7810.EPS

(2) Connect the I/F cable to the I/F cable connector of the RU.

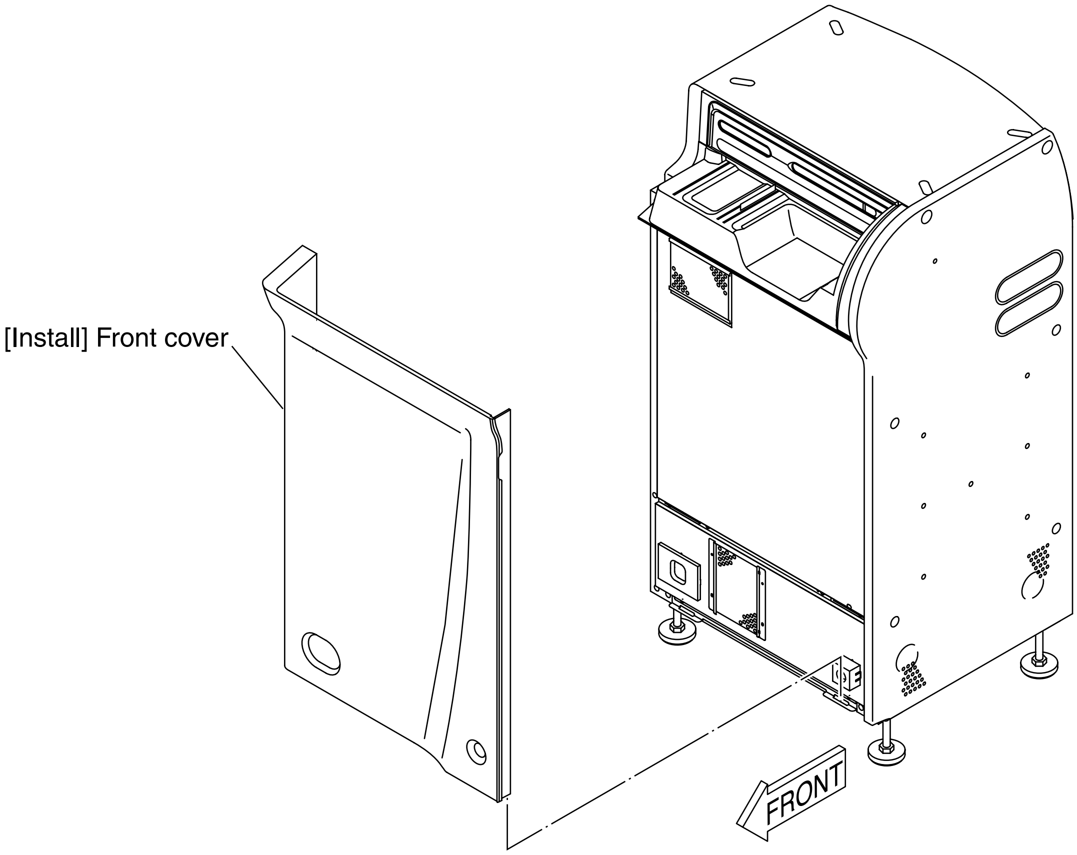
**◇ REFERENCE ◇**

*The I/F cable should be connected with its ferrite bead end on the RU side.*


Ferrite bead
I/F cable
I/F cable connector
FRONT
Ferrite bead
Power cable
I/F cable
Switching hub
(100 BASE - T or
10 BASE - T)
Network
FR6H7725.EPS

# 8. Installing the Cover

(1) Install the front cover.



FR6H7801.EPS

# 9. CL Installation Procedures

(1) Perform the CL installation procedures.
☞ CL Service Manual "A. Installation/Chapters 3-7"

# 10. Final Placement

The following types of installation methods are available for installing the machine. Consult with the user for his request, and then install the machine according to one of the following methods.

- Securing the machine with the adjustable feet.
- Securing the machine with the retainers.
- Securing the table and machine together.
- Securing the machine with the retainers and table.

## 10.1 Securing the Machine with the Adjustable Feet

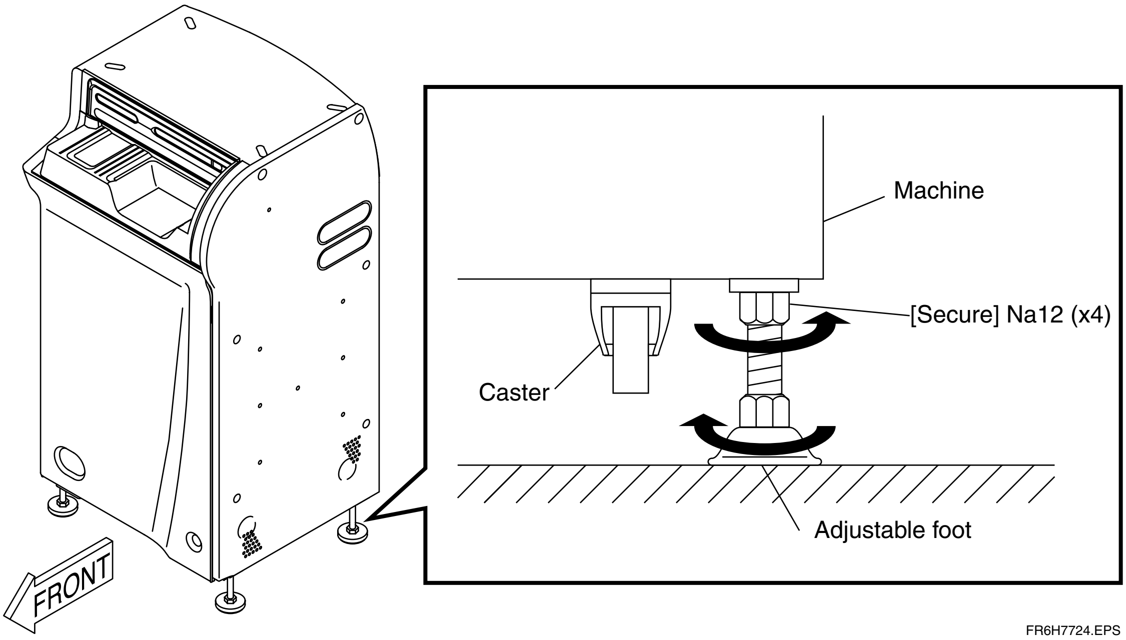
(1) Install the four adjustable feet down onto the floor.

◆ ***NOTES*** ◆

*When securing the adjustable feet, pay attention to the following points.*

- *The four adjustable feet should be evenly loaded.*
  *However, if there is too little space on the right and left sides in the machine installation place to secure the adjustable feet on the rear side, the two adjustable feet on the front side should be secured in place. In this case, the two adjustable feet and two casters should be evenly loaded.*
- *When the adjustable feet are secured, the casters should be detached from the floor.*

(2) Secure the adjustable feet.



FR6H7724.EPS

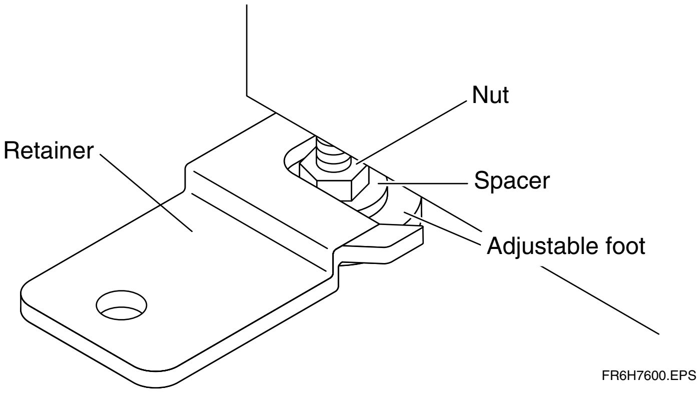
## 10.2 Securing the Machine with the Retainers

**◆ NOTE ◆**

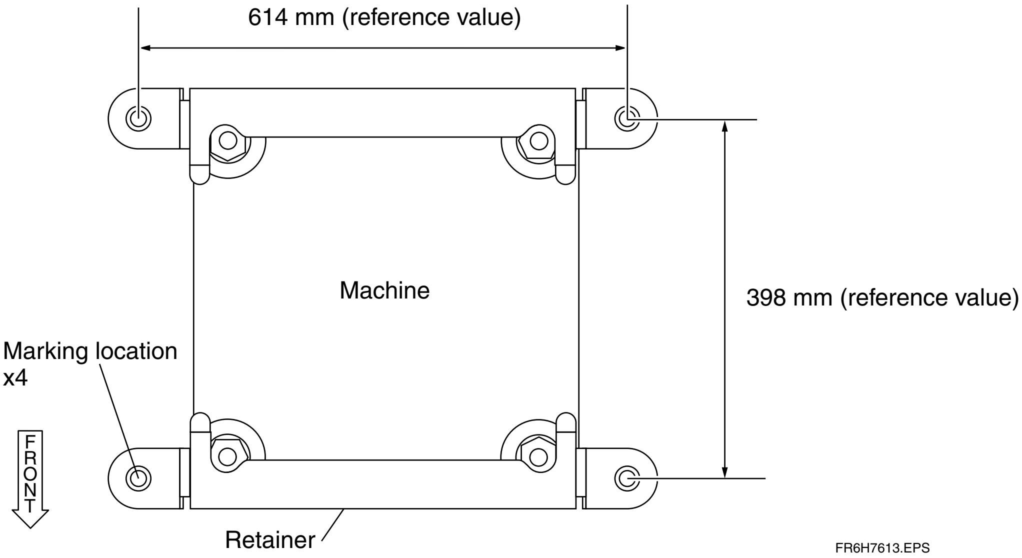
*Before drilling holes for embedding the anchor nuts, wear protective goggles.*

**◇ REFERENCE ◇**

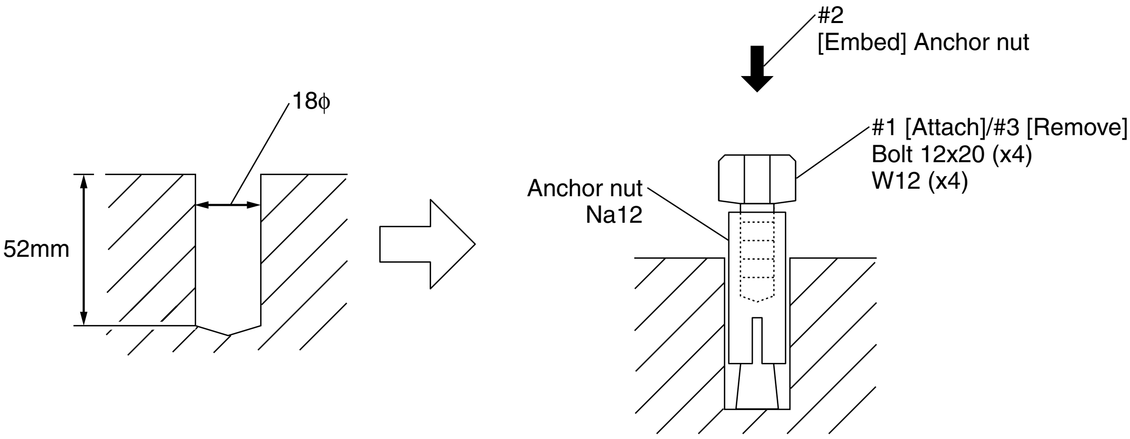
*When determining the locations for embedding the anchor nuts, temporarily install the machine and retainers in place, and then mark the locations.*
*At that time, adjust the height of the adjustable foot so that the positional relationship between the retainer and the adjustable foot nut and spacer is as shown below.*


Nut
Retainer
Spacer
Adjustable foot
FR6H7600.EPS

(1) Determine the locations for embedding the anchor nuts.


614 mm (reference value)
Machine
398 mm (reference value)
Marking location
x4
FRONT
Retainer
FR6H7613.EPS

(2) Drill holes for embedding the anchor nuts and then embed the anchor nuts.


#2
[Embed] Anchor nut
18ϕ
#1 [Attach]/#3 [Remove]
Bolt 12x20 (x4)
W12 (x4)
Anchor nut
Na12
52mm

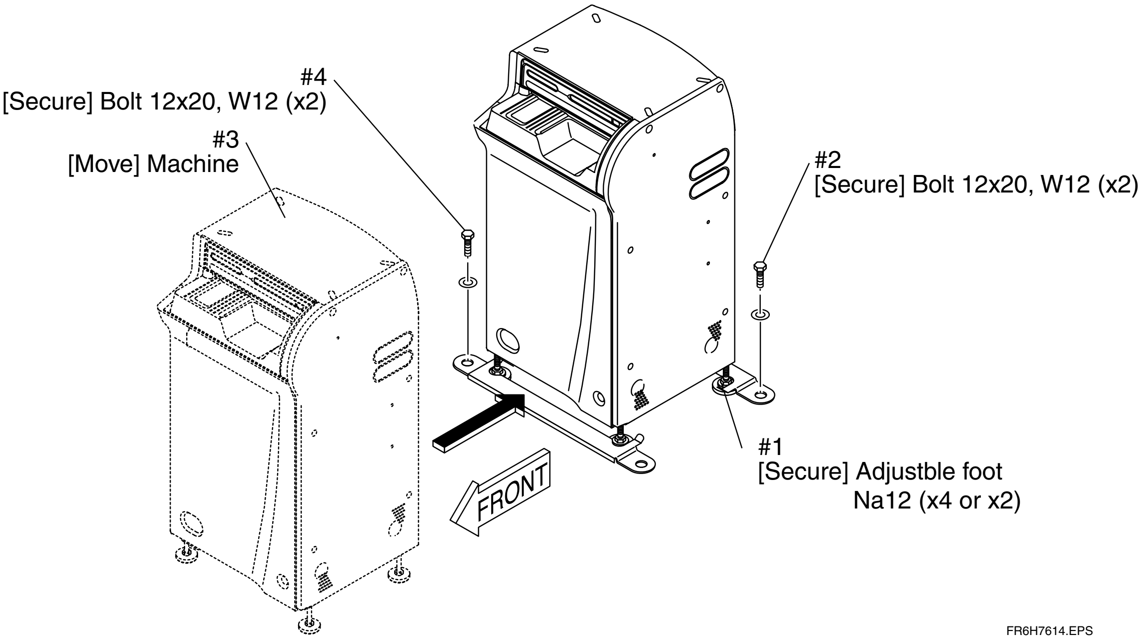
FR6H7723.EPS

(3) Secure the machine in place.

**◆ NOTES ◆**

*When securing the adjustable feet, pay attention to the following points.*

- *The four adjustable feet should be evenly loaded.*
  *However, if there is too little space on the right and left sides in the machine installation place to secure the adjustable feet on the rear side, the two adjustable feet on the front side should be secured in place. In this case, the two adjustable feet and two casters should be evenly loaded.*
- *When the adjustable feet are secured, the casters should be detached from the floor.*


#4
[Secure] Bolt 12x20, W12 (x2)
#3
[Move] Machine
#2
[Secure] Bolt 12x20, W12 (x2)
#1
[Secure] Adjustble foot
Na12 (x4 or x2)
FRONT

FR6H7614.EPS

## 10.3 Securing the Table and Machine Together

***◆ NOTES ◆***

- *The four adjustable feet should be evenly loaded.*
  *However, if there is too little space on the right and left sides in the machine installation place to secure the adjustable feet on the rear side, the two adjustable feet on the front side should be secured in place. In this case, the two adjustable feet and two casters should be evenly loaded.*
- *When the adjustable feet are secured, the casters should be detached from the floor.*
- *After securing the bracket, make sure that the bracket does not interfere with the machine. If they interfere with each other, adjust the position of the machine as appropriate.*

(1) Secure the machine to the table.

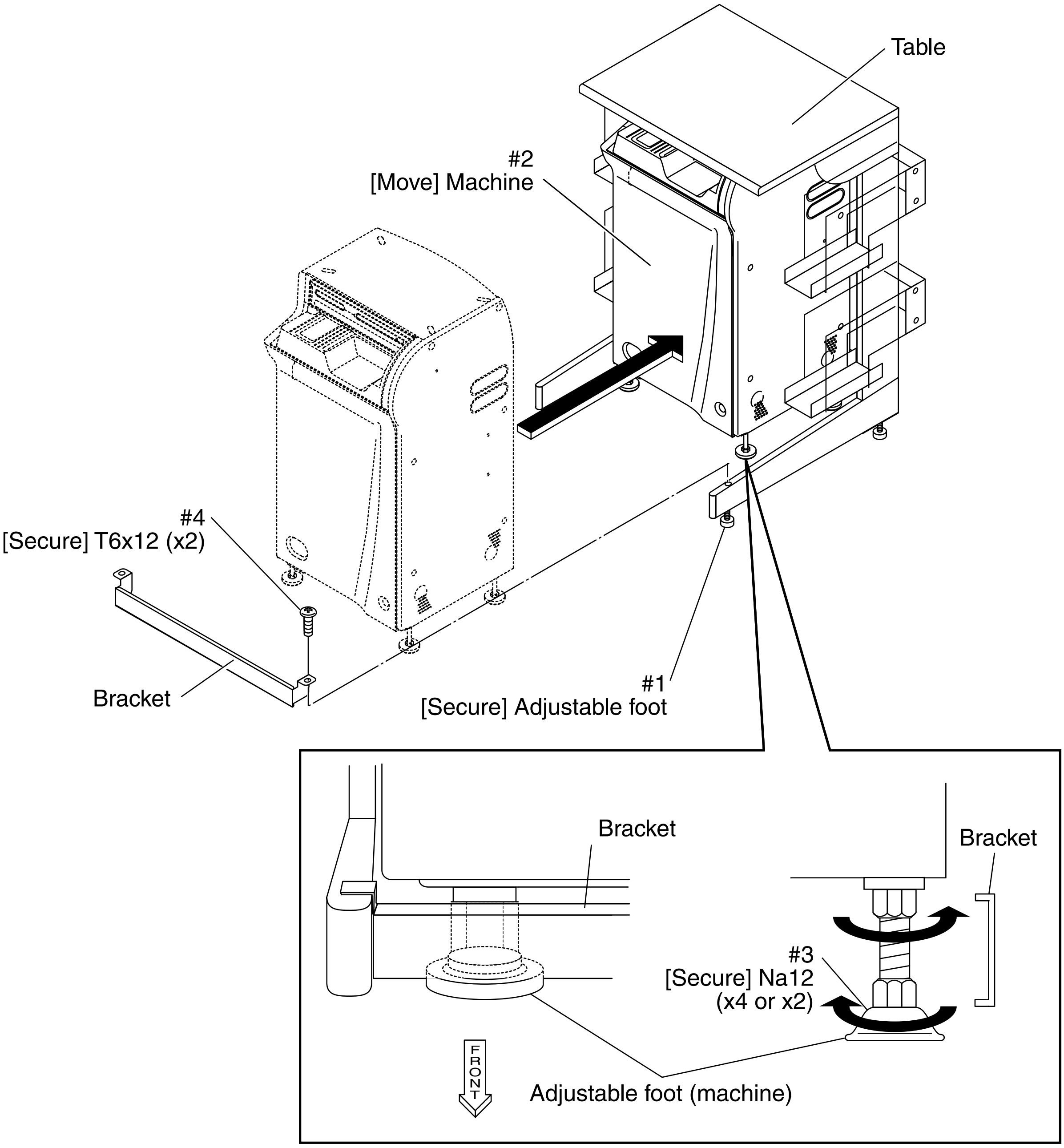


Table
#2
[Move] Machine
#4
[Secure] T6x12 (x2)
Bracket
#1
[Secure] Adjustable foot
Bracket
Bracket
#3
[Secure] Na12
(x4 or x2)
FRONT
Adjustable foot (machine)

FR6H7617.EPS

## 10.4 Securing the Machine with the Retainers and Table

**◇ *REFERENCE* ◇**

*The adjustable feet attached on the table should be removed in advance.*

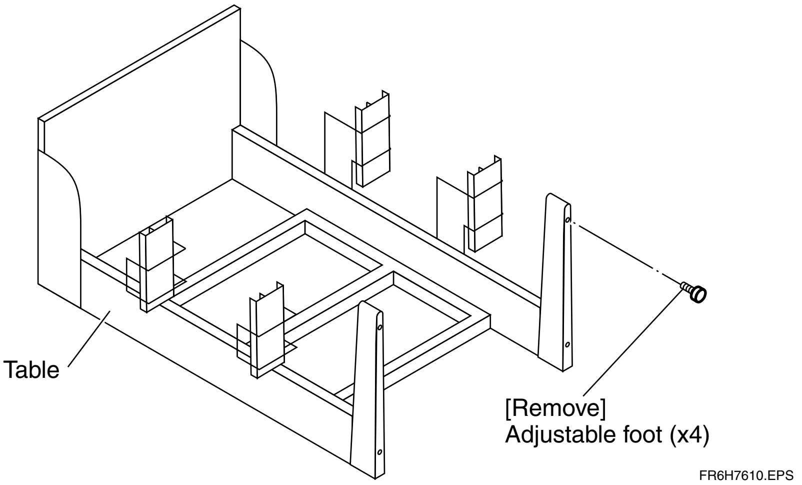
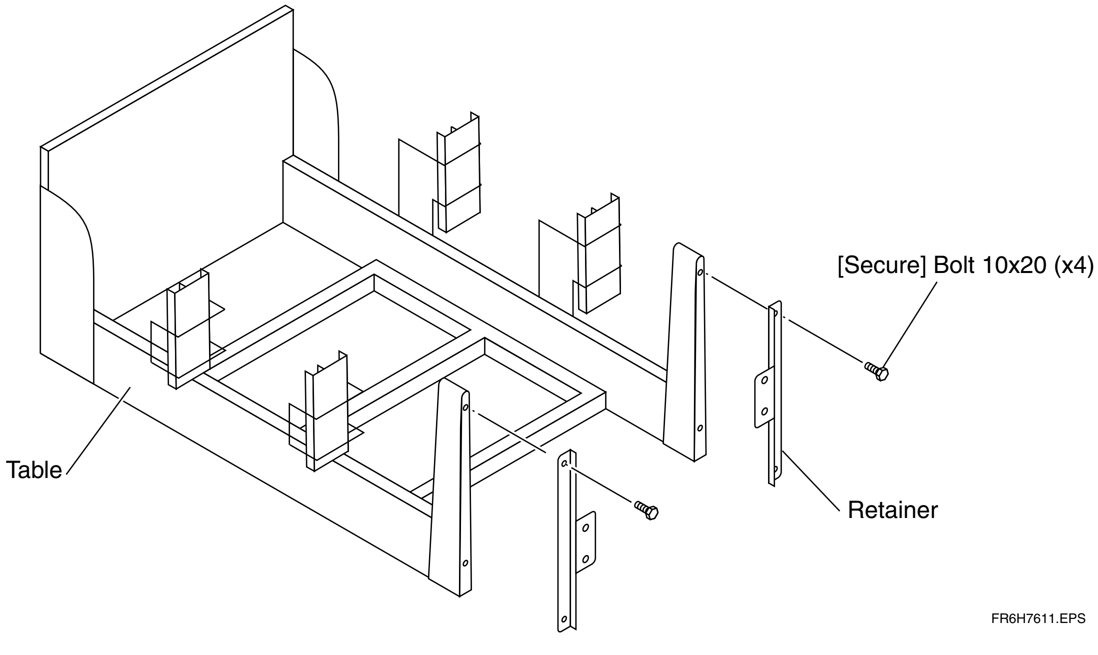


Table
[Remove]
Adjustable foot (x4)
FR6H7610.EPS

(1) Attach the retainers to the table.


[Secure] Bolt 10x20 (x4)
Table
Retainer
FR6H7611.EPS

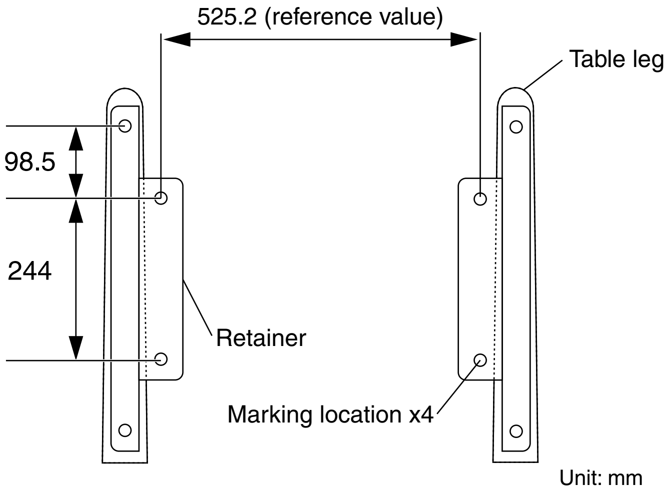
**◆ *NOTE* ◆**

*Before drilling holes for embedding the anchor nuts, wear protective goggles.*

**◇ *REFERENCE* ◇**

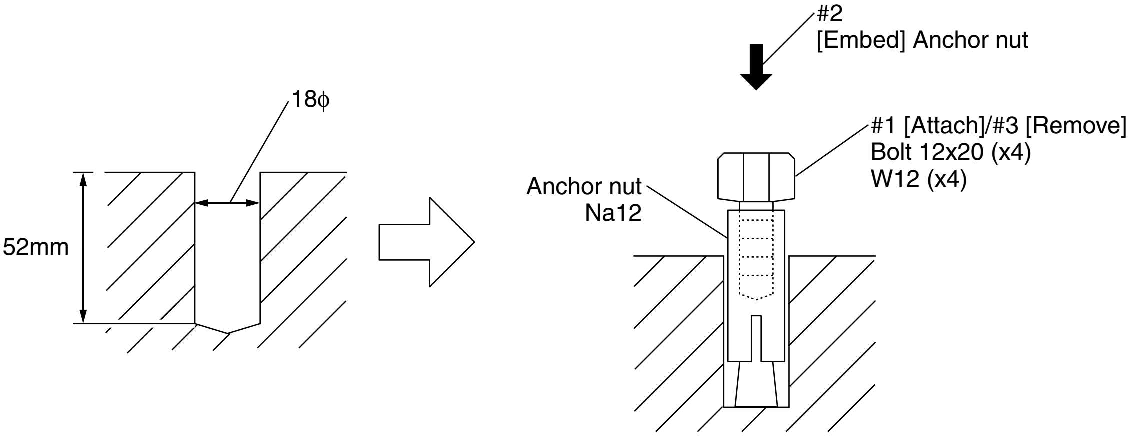
*When determining the locations for embedding the anchor nuts, perform temporary installation with the retainers attached to the table, and then mark the locations.*

(2) Determine the locations for embedding the anchor nuts.


525.2 (reference value)
Table leg
98.5
244
Retainer
Marking location x4
Unit: mm

FR6H7612.EPS

(3) Drill holes for embedding the anchor nuts, and then embed the anchor nuts.


#2
[Embed] Anchor nut
18ϕ
52mm
#1 [Attach]/#3 [Remove]
Bolt 12x20 (x4)
W12 (x4)
Anchor nut
Na12

FR6H7723.EPS

(4) Secure the table in place.

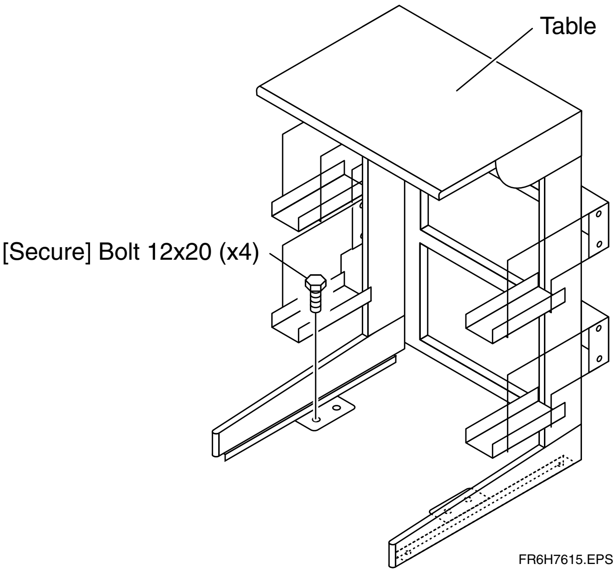


Table
[Secure] Bolt 12x20 (x4)

FR6H7615.EPS

### ◆ *NOTES* ◆

- *The four adjustable feet should be evenly loaded.*
  *However, if there is too little space on the right and left sides in the machine installation place to secure the adjustable feet on the rear side, the two adjustable feet on the front side should be secured in place. In this case, the two adjustable feet and two casters should be evenly loaded.*
- *When the adjustable feet are secured, the casters should be detached from the floor.*
- *After securing the bracket, make sure that the bracket does not interfere with the machine. If they interfere with each other, adjust the position of the machine as appropriate.*

(5) Secure the machine to the table.

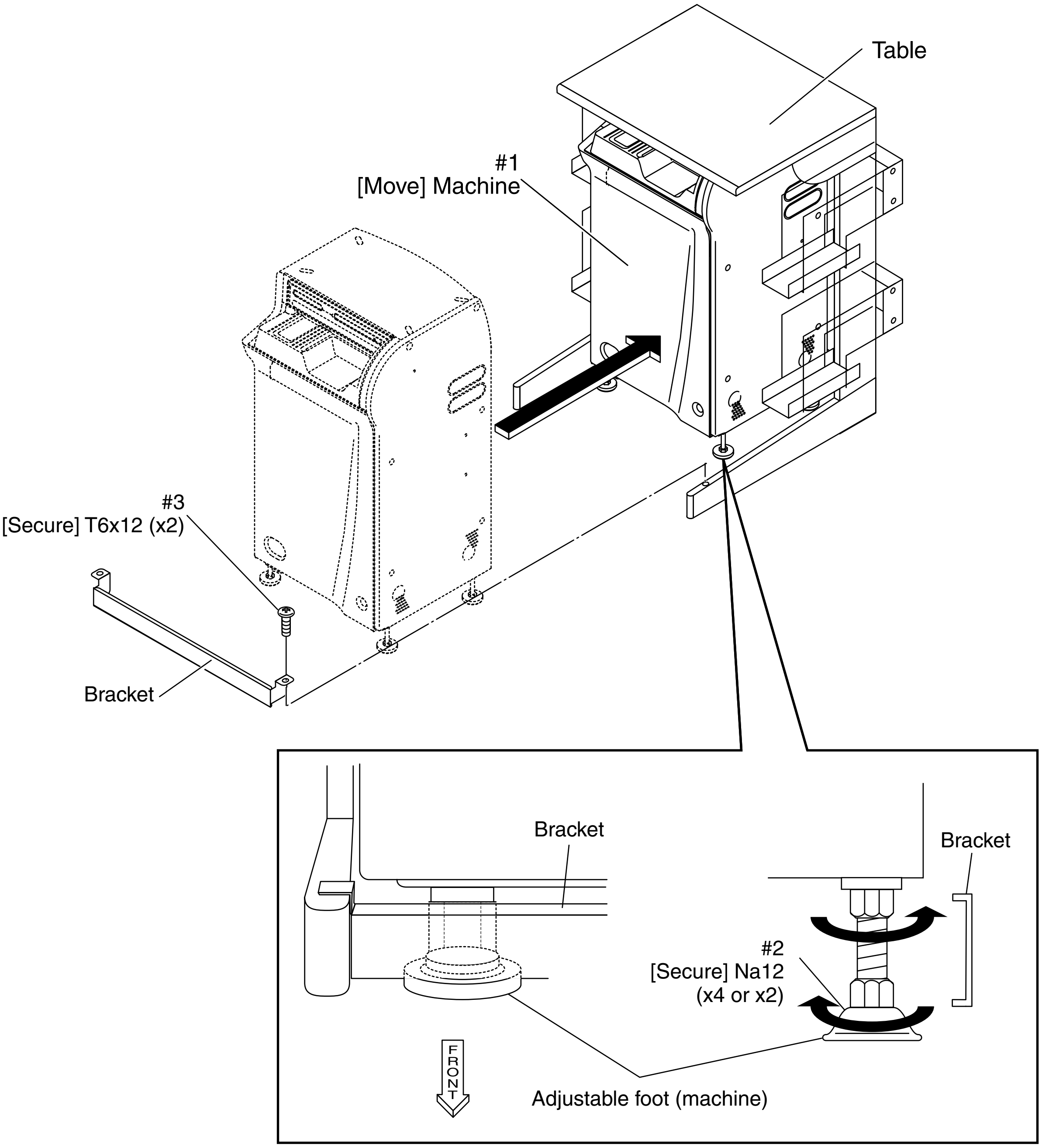
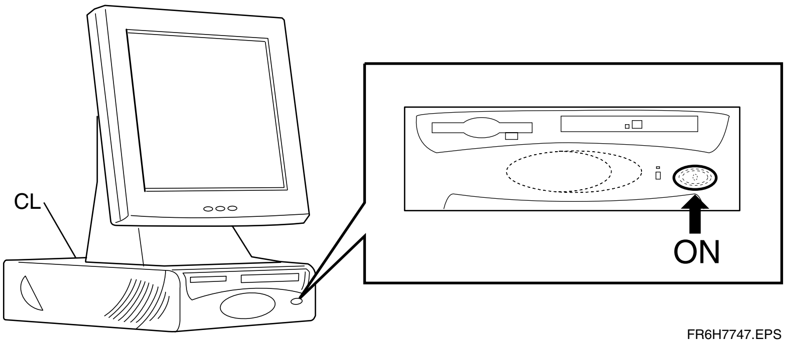


Table
#1
[Move] Machine
#3
[Secure] T6x12 (x2)
Bracket
Bracket
Bracket
#2
[Secure] Na12
(x4 or x2)
FRONT
Adjustable foot (machine)

FR6H7616.EPS

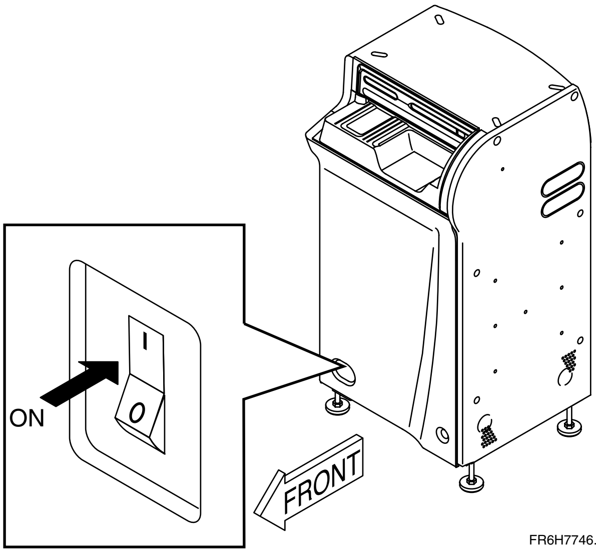
# 11. Powering ON the CL/RU

(1) Power ON the CL.



FR6H7747.EPS

(2) Power ON the RU.



FR6H7746.EPS

# 12. Image/Conveyance Checks

In this section, the following checks are made as last-time verification for final placement.

- Conveyance checks
- Image checks

## ■ Preparation Procedures

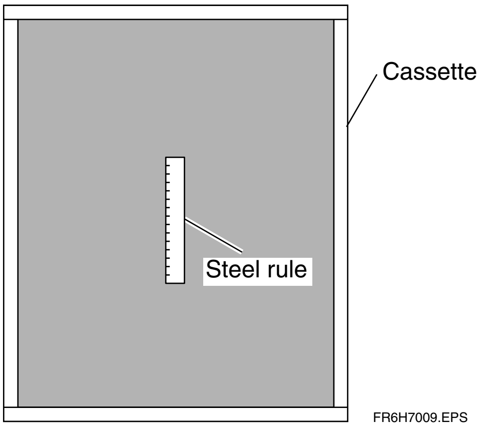
**◆ *NOTES* ◆**

- *For the IP used for image/conveyance checks, an IP of the maximum size used in the hospital should be employed.*
- *Make sure that the IP to be used does not contain any important image data exposed.*

(1) Subject the IP to be used to primary erasure.

☞ “RU Instruction Manual/2.4 When Only Image Erasure is to be Performed (Primary Erasure)”

(2) Place a steel rule (150mm) on the cassette and expose it at 1 mR.



FR6H7009.EPS

**◇ *REFERENCE* ◇**

*If the IP cannot be exposed at 1 mR, it should be exposed at a level equivalent to 1 mR, with reference to the following exposure conditions.*
*Note, however, that those conditions are for standard IP setup reference.*

| | |
|---|---|
| *Distance:* | *1.8 m* |
| *Voltage:* | *80 kV* |
| *Amperage:* | *50 mA* |
| *Time:* | *0.013 sec* |

## 12.1 Conveyance Checks

◆ ***NOTE*** ◆

*The trimming function should be disabled.*
☞ *“CL Service Manual/Function-specific Reference/2. Setup Necessary When Editing the Film Annotation Character Format“*

(1) Output the image exposed at 1 mR.

At this time, make sure that the IP conveyance mechanism of the RU is operating normally.

☞ “RU Instruction Manual/2. Operating Procedures”

◆ ***CHECKS*** ◆

- *There should be no offensive noise or odor.*
- *There should be no IP jam.*
- *The IP should be free from any scratch or damage after reading.*
  *If anything abnormal is found, see [Troubleshooting Volume].*

## 12.2 Image Checks

(1) Verify that there is no unusual nonuniformity found on the output film and on the image displayed on the image monitor.

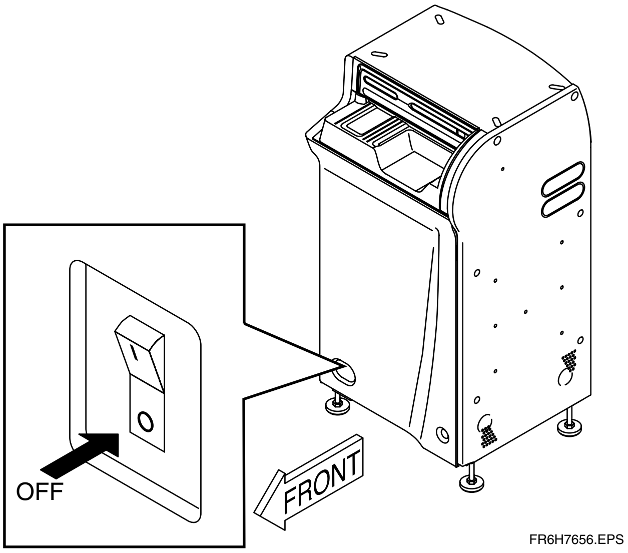
◆ ***CHECK*** ◆

*There should be no unusual nonuniformity.*
*If anything abnormal is found, see [Troubleshooting Volume].*

# 13. Powering OFF the CL/RU

(1) Shut down the system of the CL.

(2) Power OFF the RU.



# 14. Cleaning the CL/RU

(1) Clean the monitor and covers of the CL with a dry cloth.

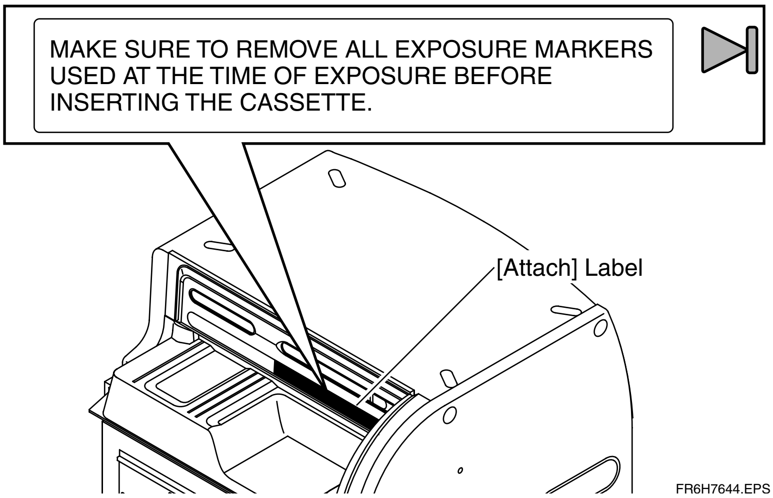
(2) Clean the covers of the RU with a moistened cloth.

# 15. Attaching the Cassette Handling Precaution Label

**◆ *NOTE* ◆**

*Before attaching the cassette handling precaution label, consult with the user regarding the following points.*
*• Check to see whether the label is to be attached or not.*
*• Location where the label is to be attached.*

(1) Attach the cassette handling precaution label above the cassette size indication.



MAKE SURE TO REMOVE ALL EXPOSURE MARKERS USED AT THE TIME OF EXPOSURE BEFORE INSERTING THE CASSETTE.

# Appendix 1. On-Site Relocation

The procedures described in this appendix are applicable only when the CR-IR346RU is to be relocated within the institution.

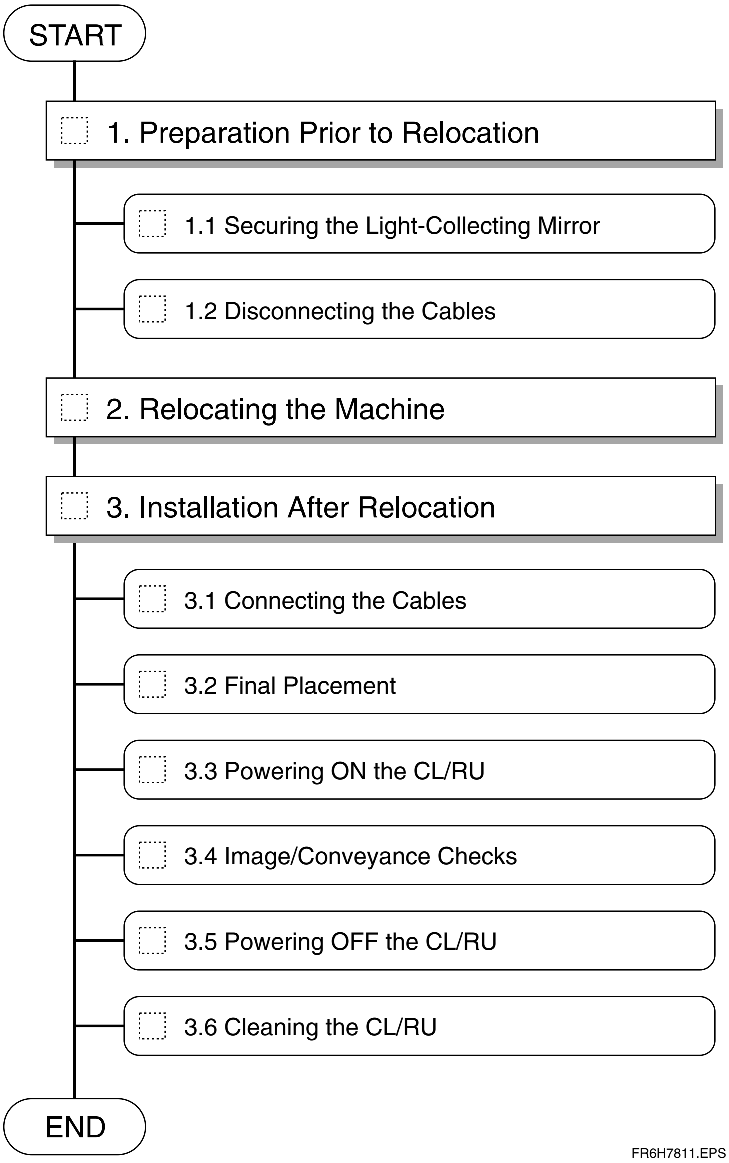
**CAUTIONS**

- *The procedures described in this appendix should be used only for on-site relocation and not for purposes of moving the machine out of the institution by use of a truck or the like.*
- *When the machine is to be moved out of the institution by use of a truck or the like, use appropriate clamping materials to pack the machine and transport it under the same condition as when it was originally shipped. If it were transported under different conditions than when it was shipped, the machine would be damaged or its quality could not be guaranteed.*

◆ ***NOTE*** ◆

*The procedures described in this appendix are based on the assumption that RU software version A07 or later (PC-MUTL software version 1.2 or later) is used.*

## ■ Workflow for On-Site Relocation


START
☐ 1. Preparation Prior to Relocation
☐ 1.1 Securing the Light-Collecting Mirror
☐ 1.2 Disconnecting the Cables
☐ 2. Relocating the Machine
☐ 3. Installation After Relocation
☐ 3.1 Connecting the Cables
☐ 3.2 Final Placement
☐ 3.3 Powering ON the CL/RU
☐ 3.4 Image/Conveyance Checks
☐ 3.5 Powering OFF the CL/RU
☐ 3.6 Cleaning the CL/RU
END

FR6H7811.EPS

# 1. Preparation Prior to Relocation

## 1.1 Securing the Light-Collecting Mirror

***◆ NOTES ◆***

- *Take note of the product serial number of the machine to be relocated.*
- *Back up "CONFIGURATION" and "HISTORY.LOG" onto a floppy diskette.*

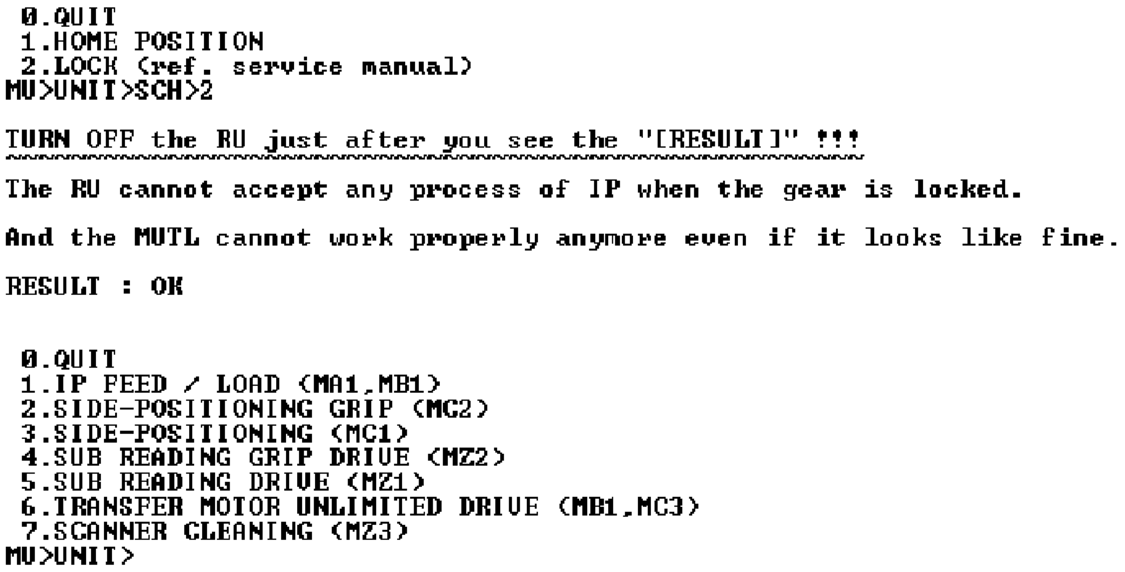
***CAUTION***

*If shocks or vibrations caused by any bump on the floor are possibly transmitted to the machine during its transfer, be sure to secure the light-collecting mirror in place. Otherwise, the light-collecting mirror might be broken by such vibrations.*

(1) Start the M-Utility.

(2) [6][ENT] → [4][ENT] → [7][ENT] → [2][ENT]

The light-collecting mirror is locked.



```
 0.QUIT
 1.HOME POSITION
 2.LOCK (ref. service manual)
MU>UNIT>SCH>2

TURN OFF the RU just after you see the "[RESULT]" !!!

The RU cannot accept any process of IP when the gear is locked.

And the MUTL cannot work properly anymore even if it looks like fine.

RESULT : OK


 0.QUIT
 1.IP FEED / LOAD (MA1,MB1)
 2.SIDE-POSITIONING GRIP (MC2)
 3.SIDE-POSITIONING (MC1)
 4.SUB READING GRIP DRIVE (MZ2)
 5.SUB READING DRIVE (MZ1)
 6.TRANSFER MOTOR UNLIMITED DRIVE (MB1,MC3)
 7.SCANNER CLEANING (MZ3)
MU>UNIT>
```

FR6H7813.EPS

(3) Power OFF the RU and CL.

***◆ NOTE ◆***

*Once "LOCK" is executed, the RU no longer works properly, so that power of the RU should be turned OFF immediately.*

## 1.2 Disconnecting the Cables

(1) Disconnect the power and interface cables.

# 2. Relocating the Machine

⚠ **CAUTIONS**

- *When relocating the machine by use of its casters, raise the adjustable feet of the machine all the way up to their upper limit.*
- *When moving the machine, support it so that it will not topple down.*
- *When the machine should be moved over some step or bump, move it as slowly as possible to avoid shock to it.*
- *If a step or bump over which the machine should be moved is 10 mm or higher, place a rigid steel plate or the like over such a step or bump.*

(1) Raise the adjustable feet of the machine.

(2) Relocate the machine.

# 3. Installation After Relocation

## 3.1 Connecting the Cables

☞ "7. Connecting the Cables"

## 3.2 Final Placement

☞ "10. Final Placement"

## 3.3 Powering ON the CL/RU

☞ "11. Powering ON the CL/RU"

## 3.4 Image/Conveyance Checks

☞ "12 Image/Conveyance Checks"

## 3.5 Powering OFF the CL/RU

☞ "13. Powering OFF the CL/RU"

## 3.6 Cleaning the CL/RU

☞ "14. Cleaning the CL/RU"